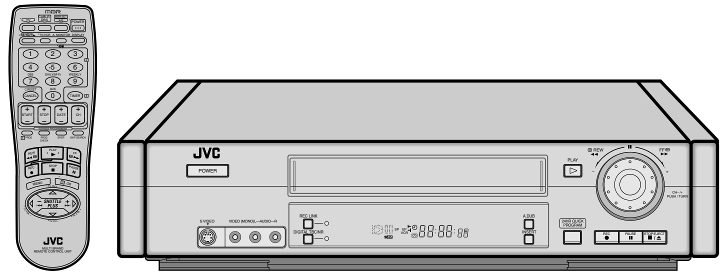
JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-S7900U/U(C)



S-VHS
Hi-Fi
VCR plus+ ®
C3 CABLE BOX CONTROL
Super VHS ET

Regarding service information other than these sections, refer to the HR-S5900U service manual (No. 82848). Also, be sure to note important safety precautions provided in the service manual.

SPECIFICATIONS

GENERAL

Power requirement : AC 120 V∿ , 60 Hz
Power consumption
    Power on : 20 W
    Power off : 2.5 W
Temperature
    Operating : 5°C to 40°C (41°F to 104°F)
    Storage : –20°C to 60°C (–4°F to140°F)
Operating position : Horizontal only
Dimensions (W x H x D) : 400 mm x 94 mm x 283 mm
Weight : 3.4 kg
Format : S-VHS/VHS NTSC standard
Maximum recording time
    SP : 210 min. with ST-210 video cassette
    EP : 630 min. with ST-210 video cassette

VIDEO/AUDIO

Signal system : NTSC-type color signal and EIA monochrome signal, 525 lines/ 60 fields
Recording/ Playback system : DA-4 (Double Azimuth) head helical scan system
Signal-to-noise ratio : 45 dB
Horizontal resolution
    VHS : 230 lines
    S-VHS : 400 lines
Frequency range
    Normal audio : 70 Hz to 10,000 Hz
    Hi-Fi audio : 20 Hz to 20,000 Hz
Input/Output : RCA connectors (IN x 2, OUT x 1)
    S-video connectors (IN x 2, OUT x 1)

TUNER

Tuning system : Frequency-synthesized tuner
Channel coverage
    VHF : Channels 2–13
    UHF : Channels 14–69
    CATV : 113 Channels
RF output : Channel 3 or 4 (switchable; preset to Channel 3 when shipped) 75 ohms, unbalanced

TIMER

Clock reference : Quartz
Program capacity : 1-year programmable timer/ 8 programs
Memory backup time : Approx. 3 min.

ACCESSORIES

Provided accessories : Infrared remote control unit, “AA” battery x 2,
    S-video cable (4-pin),
    RF cable (F-type),
    Audio/video cable,
    Controller

Specifications shown are for SP mode unless specified otherwise.
E. & O.E. Design and specifications subject to change without notice.

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The following table indicate main different points between models HR-S5900U, HR-S7900U and HR-S7900U(C).

MODEL ITEM	HR-S5900U	HR-S7900U	HR-S7900U(C)
DIGITAL 3R	NOT USED	DIGITAL	←
TBC/NR	NOT USED	USED	←
RECODING RESUME FUNCTION	NOT USED	USED	←

The following tables indicate different parts number between models HR-S5900U, HR-S7900U and HR-S7900U(C).

PACKING AND ACCESSORY ASSEMBLY <M1>

⚠ REF. NO	MODEL ITEM	HR-S5900U	HR-S7900U	HR-S7900U(C)
301	PACKING CASE	LP30899-001B	LP30943-001A	←
302	CUSHION ASSY	LP30718-001B	LP30536-002A	←
303	POLY BAG	PQM30021-93	PQM30021-103	←
⚠ 310	INST BOOK(EN)	LPT0503-001A	LPT0504-001A	←
⚠	INST BOOK(FR)	—	—	LPT0504-002A
314	CABLE ASSY(AUDIO/VIDEO)	—	QAM0174-001	←
315	LED CABLE ASSY	—	QAL0095-005	←
320	SHEET(COUPON)	LP30666-002B	—	—

FINAL ASSEMBLY <M2>

⚠ REF. NO	MODEL ITEM	HR-S5900U	HR-S7900U	HR-S7900U(C)
⚠ 501	FRONT PANEL ASSY	LP10289-062C	LP10289-064C	←
501D	DISPLAY WINDOW	LP20869-092A	LP20869-094B	←
⚠ 502	TOP COVER	LP10013-021D	LP10013-057B	←
503	SCREW,TOP COVER(SIDE)	QYTDSF3010M,X2	QYTDSF3010M,X4	←
⚠ 511	BOTTOM CHASSIS	*LP10108-012E	LP10108-012F	←
533	SIDE PANEL(L)	—	LP10389-001B	←
534	SIDE PANEL(R)	—	LP10390-001B	←

Notes : Mark ← is same as left.
Mark — is not used.

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MAIN BOARD ASSEMBLY <03>

⚠ REF. NO	MODEL ITEM	HR-S5900U	HR-S7900U	HR-S7900U(C)
PW1	MAIN BOARD ASSY	LPA10134-03D1	LPA10134-08D1	←
IC3003	IC	IC-PST3440U-X	IC-PST3423U-X	←
Q3004	TRANSISTOR	—	2SD1819A/QRS/-X	←
D12	DIODE	*1SS270A	—	—
D501	DIODE	*—	1SS355	←
D3004	DIODE	—	11ES2	←
D3006	ZENER DIODE	—	RD33ES/B2/-T2	←
R12	MG RESISTOR	*NRSA02J-0R0X	—	—
R30	MG RESISTOR	*NRSA02J-0R0X	—	—
R46	MG RESISTOR	NRSA02J-471X	NRSA02J-271X	←
R75	MG RESISTOR	—	NRSA02J-225X	←
R92	MG RESISTOR	*NRSA02J-0R0X	—	—
R3014	MG RESISTOR	—	NRSA02J-102X	←
R3019	MG RESISTOR	*—	NRSA02J-0R0X	←
R3042	MG RESISTOR	*—	NRSA02J-0R0X	←
R3043	MG RESISTOR	*NRSA02J-0R0X	—	—
R3095	MG RESISTOR	*NRSA02J-0R0X	—	—
R3232	MG RESISTOR	—	NRSA02J-104X	←
R3233	MG RESISTOR	—	NRSA02J-472X	←
R3234	MG RESISTOR	—	QRE141J-472Y	←
R3242	MG RESISTOR	NRSA02J-0R0X	—	—
R7010	MG RESISTOR	*NRSA02J-0R0X	—	—
B6	MG RESISTOR	*NRSA02J-0R0X	—	—
B3001	MG RESISTOR	NRSA02J-0R0X	—	—
B5308	MG RESISTOR	*NRSA02J-0R0X	—	—
C57	CAPACITOR	NCB21HK-103X	—	—
C63	CAPACITOR	NCB21EK-104X	NCB21EK-473X	←
C106	MG RESISTOR	*NRSA02J-0R0X	—	—
C201	E CAPACITOR	QEKJ0JM-107	QEKJ0JM-476	←
C3019	MG RESISTOR/CAPACITOR	NRSA02J-0R0X	NDC21HJ-150X	←
C3020	CAPACITOR	—	NDC21HJ-180X	←
C3028	E CAPACITOR	—	QETN0JM-108	←
C7003	E CAPACITOR	*QEKJ0JM-476	QETJ1AM-227	←
X3002	CRYSTAL RESONATOR	—	QAX0444-001	←
S7016	TACT SWITCH	QSW0456-002Z(SVHS ET)	QSW0456-002Z(D.TBC/NR)	←
J7101	PIN JACK,FRONT IN	QNN0381-001	QNN0383-001	←

2D DIGITAL BOARD ASSEMBLY <05>

⚠ REF. NO	MODEL ITEM	HR-S5900U	HR-S7900U	HR-S7900U(C)
PW1	2D DIGITAL BOARD ASSY	LPA10090-05A	—	—

3D DIGITAL/2M BOARD ASSEMBLY <05>

⚠ REF. NO	MODEL ITEM	HR-S5900U	HR-S7900U	HR-S7900U(C)
PW1	3D DIGITAL/2M BOARD ASSY	—	LPA10105-02A	←

S JACK BOARD ASSEMBLY <36>

⚠ REF. NO	MODEL ITEM	HR-S5900U	HR-S7900U	HR-S7900U(C)
PW1	S JACK BOARD ASSY	LPA20009-02B	LPA20009-01B	←
J7102	S JACK	QND0084-001	QND0085-001	←

Notes : Mark ← is same as left.
Mark — is not used.
Mark : * reference model was also changed.

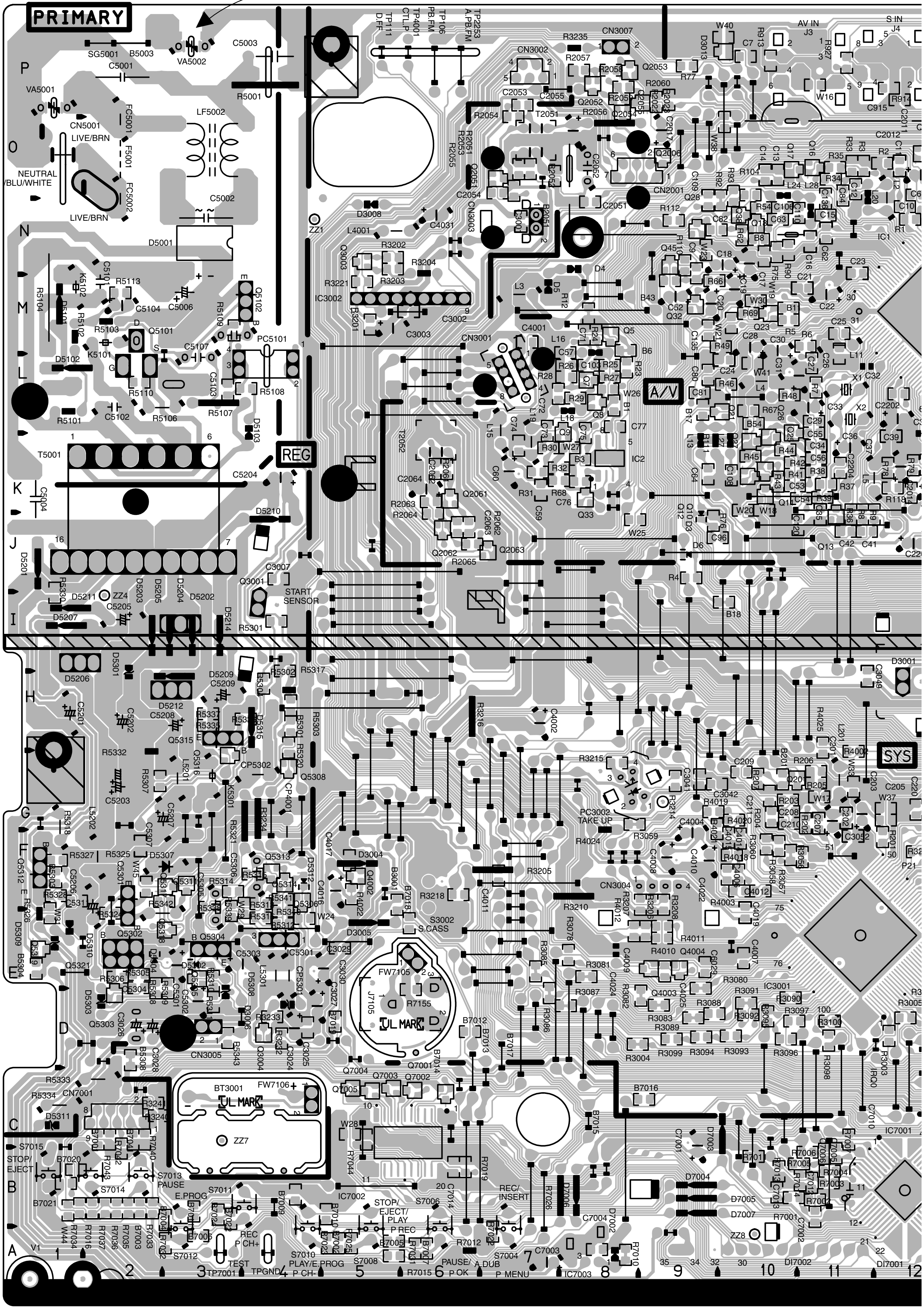
SECTION 4
CHARTS AND DIAGRAMS

COMPONENT PARTS LOCATION GUIDE <MAIN>

REF.NO.	LOCATION		
CAPACITOR			
C1	B	C	15N
C2	B	C	14N
C3	B	C	14N
C4	B	C	14N
C5	A	D	15N
C6	B	C	13N
C7	B	C	10P
C8	B	C	17O
C9	B	C	9N
C10	B	C	12N
C11	B	C	12O
C12	B	C	11O
C13	B	C	10O
C14	B	C	10O
C15	B	C	11N
C16	B	C	11N
C17	A	D	10N
C18	A	D	10N
C19	A	D	10M
C20	A	D	9M
C21	B	C	11M
C22	A	D	11M
C23	B	C	11N
C24	B	C	10L
C25	B	C	11M
C26	B	C	11M
C27	B	C	11L
C28	A	D	10M
C29	B	C	11L
C30	A	D	10M
C31	A	D	11L
C32	A	D	11L
C33	A	D	11L
C34	B	C	11K
C35	B	C	11J
C36	A	D	11K
C37	A	D	12K
C38	A	D	12L
C39	B	C	12K
C40	A	D	12K
C41	B	C	11J
C42	B	C	11J
C51	A	D	17E
C52	A	D	9M
C53	B	C	10K
C54	B	C	11K
C55	B	C	11L
C56	B	C	11K
C57	B	C	8M
C59	B	C	7K
C60	A	D	7K
C61	B	C	12O
C62	B	C	11N
C63	B	C	10N
C64	B	C	9K
C69	B	C	16N
C70	B	C	16N
C71	B	C	8M
C72	B	C	7L
C73	B	C	7L
C74	B	C	7K
C75	B	C	8L
C76	B	C	8K
C77	B	C	8L
C80	B	C	9L
C81	B	C	9L
C82	B	C	9N
C84	B	C	11N
C96	B	C	10J
C103	B	C	8L
C106	B	C	10N
C108	B	C	10K
C109	B	C	9N
C110	B	C	11N
C120	B	C	11J
C135	B	C	9M
C136	B	C	11N
C137	B	C	15N
C201	A	D	11G
C202	B	C	11G
C203	A	D	11G
C205	B	C	12G
C207	B	C	11G
C208	B	C	10G
C209	B	C	10G
C210	B	C	10G
C211	B	C	10G
C220	B	C	12G
C401	B	C	15O
C402	B	C	15O
C403	B	C	15O
C404	B	C	16O
C405	B	C	16O
C406	B	C	16O
C407	B	C	16O
C408	B	C	17O
C409	A	D	17O
C501	A	D	17G
C502	A	D	16F
C503	A	D	18F
C504	B	C	17F
C505	A	D	19E
C506	B	C	18G
C507	A	D	18G
C508	A	D	19F
C509	A	D	19F
C510	A	D	19F
C511	B	C	19F
C512	B	C	20F
C513	A	D	19F
C514	B	C	19G
C515	A	D	19H
C516	B	C	18H
C517	B	C	18I
C518	B	C	19H
C519	A	D	19G
C520	A	D	19H
C521	A	D	19E
C522	A	D	20E
C523	A	D	20E
C524	B	C	19E
C525	B	C	19E
C526	B	C	19D
C527	B	C	19D
C528	B	C	20E
C529	B	C	20D
C530	B	C	20D
C531	B	C	21E
C532	B	C	20E
C533	B	C	20E
C534	A	D	20E
C535	B	C	19F
C551	A	D	18H
C552	B	C	18H
C553	B	C	18H
C554	A	D	18G
C555	B	C	18G
C556	B	C	18G
C557	A	D	17G
C558	B	C	17G
C559	B	C	17G
C560	A	D	17G
C561	A	D	17G
C563	B	C	18F
C565	B	C	19F
C567	B	C	19H
C901	A	D	20O
C903	A	D	19N
C904	B	C	19N
C911	B	C	12P
C912	B	C	18N
C913	A	D	18N
C914	B	C	20G
C915	B	C	12P
C2001	A	D	13K
C2002	A	D	14L
C2003	A	D	14N
C2004	B	C	14N
C2005	A	D	14O
C2006	B	C	13O
C2007	A	D	13O
C2008	A	D	13N
C2009	B	C	13O
C2010	B	C	13O
C2011	A	D	12O
C2012	A	D	12O
C2014	B	C	12K
C2015	B	C	13O
C2017	A	D	9O
C2051	B	C	8N
C2052	A	D	8O
C2053	B	C	7P
C2054	B	C	7O
C2055	A	D	8O
C2061	A	D	19L
C2062	B	C	6K
C2063	B	C	6J
C2064	A	D	6K
C2201	B	C	12K
C2202	B	C	12L
C2203	A	D	12K
C2204	B	C	11K
C2205	A	D	12J
C2206	A	D	12J
C2207	A	D	13J
C2208	A	D	13K
C2209	A	D	13K
C2210	A	D	13K
C2211	A	D	14K
C2212	A	D	14K
C2215	A	D	13L
C2216	A	D	13L
C2217	A	D	13L
C2218	A	D	14M
C2219	A	D	15L
C2220	A	D	15L
C2221	B	C	15L
C2222	A	D	15M
C2223	A	D	15M
C2224	B	C	15L
C2225	A	D	16L
C2226	A	D	14M
C2227	B	C	14M
C2232	A	D	15L
C2233	A	D	15L
C2234	A	D	15L
C2235	A	D	18M
C2236	A	D	18M
C2237	A	D	14L
C2238	A	D	15K
C2251	A	D	14N
C2252	B	C	14N
C2253	B	C	15N
C2254	B	C	15N
C3001	B	C	7N
C3002	B	C	6M
C3003	A	D	5M
C3007	B	C	4J
C3008	B	C	19I
C3013	A	D	13D
C3015	B	C	13E
C3016	B	C	13F
C3017	B	C	13F
C3018	A	D	13F
C3019	B	C	13F
C3020	B	C	12F
C3022	B	C	14D
C3023	B	C	16B
C3024	A	D	4D
C3025	B	C	4D
C3026	A	D	2D
C3027	A	D	4D
C3028	A	D	2D
C3029	B	C	5E
C3030	A	D	5E
C3035	B	C	12F
C3036	A	D	13F
C3041	B	C	9G
C3042	B	C	9G
C3043	B	C	13D
C3045	B	C	13D
C3048	B	C	14D
C3049	B	C	11H
C3052	B	C	11F
C3053	A	D	16A
C3054	B	C	20N
C4001	B	C	7M
C4002	A	D	7H
C4004	A	D	9F
C4006	B	C	10F
C4007	B	C	10E
C4008	A	D	9F
C4009	B	C	9E
C4010	A	D	9F
C4011	B	C	7F
C4012	B	C	10F
C4014	B	C	10F
C4015	B	C	10F
C4016	A	D	5F
C4017	B	C	5F
C4019	B	C	10E
C4022	B	C	10F
C4024	A	D	8E
C4025	B	C	9E
C4031	A	D	6N
C5001	A	D	2P
C5002	A	D	4N
C5003	A	D	4P
C5004	A	D	1K
C5006	A	D	3M
C5101	A	D	2N
C5102	A	D	2L
C5103	B	C	3L
C5104	A	D	2M
C5105	A	D	3M
C5107	A	D	3L
C5201	A	D	1H
C5202	A	D	2H
C5203	A	D	2G
C5204	A	D	4K
C5205	A	D	2I
C5206	A	D	2E
C5207	A	D	3G
C5208	A	D	3H
C5209	A	D	3H
C5301	A	D	3E
C5302	A	D	3D
C5303	A	D	3E
C5304	B	C	2E
C5305	A	D	3F
C5306	A	D	4F
C5307	B	C	2F
C5311	B	C	1F
C6005	A	D	20L
C6006	B	C	22M
C6007	A	D	21M
C6008	B	C	22M
C6012	A	D	21O
C6013	B	C	22O
C6020	B	C	22N
C6021	B	C	22N
C6022	B	C	22N
C6023	B	C	22M
C6029	B	C	9E
C6033	B	C	22J
C6052	B	C	22O
C6053	B	C	22P
C6519	B	C	20K
C6520	B	C	20K
C6551	A	D	20L
C6552	B	C	21L
C6553	A	D	20K
C6554	B	C	20K
C6555	B	C	20K
C6601	A	D	20I
C6602	A	D	20J
C6603	B	C	20H
C6605	A	D	20J
C6606	A	D	20I
C6607	B	C	20H
C6608	B	C	20H
C6609	A	D	20H
C6613	A	D	20H
C6617	A	D	21H
C6619	A	D	21I
C6650	B	C	21E
C6651	B	C	22E
C6652	B	C	22E
C6653	B	C	21E
C6654	A	D	21D
C7001	A	D	9B
C7002	B	C	11B
C7003	A	D	7A
C7004	B	C	8A
C7005	B	C	11B
C7006	B	C	11B
C7007	A	D	13B
C7008	B	C	13B
C7009	A	D	12C
C7010	A	D	11B
C7011	A	D	13B
C7012	B	C	11B
C7013	B	C	10B
C7014	B	C	6B
C7015	A	D	13B
C7206	A	D	19L
CONNECTOR			
CN1	A	D	14O
CN501	A	D	22I
CN2001	A	D	9O
CN2002	A	D	19L
CN3001	A	D	7L
CN3002	A	D	7P
CN3003	A	D	7N
CN3004	A	D	9F
CN3005	A	D	3D
CN3007	A	D	8P
CN5001	A	D	1O
CN6701	A	D	21J
CN7001	A	D	2C
CN7101	A	D	21B
CN7102	A	D	20M
CN7103	A	D	20G
DIODE			
D1	A	D	18P
D2	A	D	17P
D3	B	C	9J
D4	A	D	8N
D5	A	D	7M
D6	B	C	9J
D501	B	C	16G
D2201	A	D	17N
D2202	A	D	15K
D3001	A	D	12H
D3002	A	D	13G
D3004	A	D	5F
D3005	A	D	5E
D3006	A	D	4D
D3007	B	C	14C
D3008	A	D	5N
D3010	A	D	14E
D3013	B	C	10P
D4003	B	C	14F
D5001	B	C	3N
D5101	A	D	1M
D5102	A	D	2L
D5103	A	D	4K
D5201	A	D	1J
D5202	A	D	3I
D5203	A	D	2I
D5204	A	D	3I
D5205	A	D	3I
D5206	A	D	2I
D5207	A	D	2I
D5209	A	D	3H
D5210	A	D	4J
D5211	A	D	2I
D5212	A	D	2H
D5214	A	D	3I
D5301	A	D	2I
D5302	B	C	3E
D5303	A	D	2E
D5304	B	C	2E
D5307	A	D	2F
D5308	A	D	3D
D5309	A	D	1E
D5310	A	D	1E
D5311	A	D	1C
D5312	B	C	4F
D5315	A	D	4H
D6002	A	D	21L
D6551	A	D	21L
D6650	B	C	21F
D7001	A	D	14B
D7002	A	D	8A
D7003	A	D	10B
D7004	A	D	10B
D7005	A	D	10B
D7006	A	D	8B
D7007	A	D	10B
D7008	A	D	16A
D7009	A	D	16A
IC			
IC1	B	C	12M
IC2	B	C	8K
IC501	B	C	19G
IC502	A	D	19E
IC2201	A	D	14K
IC3001	B	C	11E
IC3002	A	D	5M
IC3003	B	C	14D
IC3004	B	C	16B
IC5301	A	D	4E
IC6601	A	D	20I
IC6650	B	C	22E
IC7001	B	C	12B
IC7002	B	C	6C
IC7003	A	D	8A
JACK			
J1	A	D	20P
J2	A	D	21P
J3	A	D	11P
J4	A	D	12P
J5	A	D	13P
J7101	A	D	20A
J7104	A	D	19O
J7105	A	D	5D
COIL			
L1	A	D	16N
L2	A	D	12O
L3	A	D	7M
L4	A	D	10L
L5	A	D	11K
L11	A	D	11M
L13	A	D	9K
L15	A	D	7L
L16	A	D	8M
L18	A	D	7L
L19	A	D	7K
L20	A	D	11O
L24	A	D	11N
L27	A	D	10K
L28	A	D	11N
L201	A	D	11G
L203	A	D	12G
L401	A	D	16O
L402	A	D	16O
L501	A	D	20F
L502	A	D	17F
L503	A	D	18F
L504	A	D	20F
L901	A	D	19N
L2001	A	D	16M
L2251	A	D	15M
L4001	A	D	6N
L5201	A	D	3G
L5202	A	D	2F
L5301	A	D	4D
L6001	A	D	21N
L6003	A	D	21O
L6004	A	D	21K
L6032	A	D	22K
L6050	A	D	21N
L6501	A	D	20K
L7201	A	D	19L
TRANSISTOR			
Q1	B	C	14N
Q2	B	C	15N
Q3	B	C	14O
Q4	B	C	14O
Q5	B	C	8M
Q7	B	C	8L
Q8	B	C	8L
Q9	B	C	8L
Q10	B	C	10K
Q11	B	C	10K
Q12	B	C	10K
Q13	B	C	11J
Q16	B	C	11O
Q17	B	C	10O
Q18	B	C	10N
Q21	B	C	10L
Q23	B	C	10M
Q25	B	C	10L
Q26	B	C	10K
Q27	B	C	10K
Q28	B	C	9N
Q32	B	C	9M
Q33	B	C	8K
Q38	B	C	10N
Q45	B	C	9N
Q50	B	C	14H
Q201	B	C	11G
Q401	B	C	15O
Q402	B	C	16O
Q403	B	C	17O
Q404	B	C	16N
Q405	B	C	17O
Q901	B	C	20N
Q903	B	C	18N
Q904	B	C	19N
Q2001	B	C	13O
Q2002	B	C	13O
Q2003	B	C	12O
Q2004	B	C	13O
Q2005	B	C	14O
Q2006	B	C	9O
Q2051	B	C	7O
Q2052	B	C	8P
Q2053	B	C	8P
Q2054	B	C	8P
Q2055	B	C	9P
Q2061	B	C	6K
Q2062	B	C	6J
Q2063	B	C	7J
Q2251	B	C	16M
Q3001	A	D	4I
Q3002	A	D	19I
Q3003	B	C	5N
Q3004	B	C	4D
Q3005	B	C	16C
Q4001	B	C	14C
Q4002	B	C	5F
Q4003	B	C	9E
Q4004	B	C	9E
Q5101	A	D	2L
Q5102	A	D	4M
Q5301	A	D	2F
Q5302	A	D	2E
Q5303	B	C	2D
Q5304	A	D	3E
Q5305	B	C	3E
Q5306	B	C	4F
Q5308	B	C	4G
Q5311	B	C	3F
Q5312	A	D	1F
Q5313	B	C	4F
Q5314	B	C	4F
Q5315	A	D	3H
Q5316	B	C	3G
Q5317	B	C	3F
Q5318	B	C	3E
Q5319	B	C	1E
Q5321	A	D	2E
Q6030	B	C	22J
Q6031	B	C	22J
Q6501	B	C	19K
Q6502	B	C	20K
Q6551	A	D	20K
Q7001	B	C	6C
Q7002	B	C	6C
Q7003	B	C	5C
Q7004	B	C	5C
Q7005	B	C	5C
Q7151	B	C	18P
Q7152	B	C	18O
Q7201	A	D	19M
RESISTOR			
R1	B	C	12N
R2	B	C	12O
R3	B	C	11O
R4	B	C	9J
R5	B	C	10M
R6	B	C	11M
R7	B	C	11L
R8	B	C	11J
R9	B	C	11J
R12	B	C	8M
R21	B	C	16O
R22	B	C	16N
R23	B	C	8L
R24	B	C	8M
R25	B	C	8L
R26	B	C	8L
R27	B	C	8L
R28	B	C	8L
R29	B	C	8L
R30	B	C	7K
R31	B	C	7K
R32	B	C	8K
R33	B	C	11O
R34	B	C	11O
R35	B	C	11O
R36	B	C	11J
R37	B	C	11K
R38	B	C	11K
R39	B	C	11K
R41	B	C	10K
R42	B	C	10K
R43	B	C	10K
R44	B	C	10K
R45	B	C	10K
R46	B	C	10L
R48	B	C	10L
R49	B	C	10M
R54	B	C	10N
R62	B	C	10N
R66	B	C	9M
R67	B	C	10L
R68	B	C	8K
R69	B	C	10M
R75	B	C	10N
R76	B	C	9J
R77	B	C	9P
R78	B	C	12K
R79	B	C	12K
R90	B	C	10N
R92	B	C	10N
R93	B	C	10N
R104	B	C	10O
R110	B	C	9N
R111	A	D	9L
R112	B	C	9N
R118	B	C	12K
R120	B	C	14P
R201	B	C	12F
R202	B	C	11G
R203	B	C	10G
R204	B	C	10G
R205	B	C	11G
R206	B	C	11G
R207	B	C	10G
R401	B	C	15O
R402	B	C	16O
R403	B	C	16O
R404	B	C	16O
R405	B	C	16O
R406	B	C	16O
R407	B	C	16N
R408	B	C	16O
R501	B	C	20G
R502	B	C	20G
R503	B	C	17F
R504	B	C	19E
R505	B	C	19E
R506	B	C	19D
R507	B	C	20D
R508	B	C	19D
R509	B	C	19D
R510	B	C	19E
R511	B	C	20D
R512	B	C	20D
R513	B	C	20D
R514	B	C	20E
R515	B	C	20E
R522	B	C	18H
R523	B	C	18H
R524	B	C	17G
R525	B	C	19H
R901	B	C	21P
R902	B	C	21P
R904	A	D	20O
R905	B	C	20N
R911	B	C	20P
R912	B	C	21B
R913	B	C	10P
R914	B	C	12P
R915	B	C	12P
R916	B	C	13P
R917	B	C	14P
R918	B	C	18N
R919	A	D	19N
R920	B	C	18N
R921	B	C	18N
R922	A	D	19N
R924	B	C	20G
R925	B	C	20G
R926	B	C	12P
R927	B	C	11P
R2001	B	C	15J
R2002	B	C	15J
R2003	B	C	15K
R2004	B	C	15K
R2005	B	C	13L
R2006	B	C	13L
R2007	B	C	14K
R2008	B	C	13L
R2009	B	C	13L
R2010	B	C	14L
R2011	A	D	15M
R2012	B	C	16M
R2013	B	C	13N
R2014	B	C	13O
R2015	B	C	13O
R2016	B	C	13O
R2017	B	C	13O
R2018	B	C	12O
R2019	B	C	12O
R2020	B	C	13O
R2021	B	C	13N
R2022	B	C	9P
R2023	B	C	9P
R2051	B	C	7O
R2052	B	C	7O
R2053	B	C	7O
R2054	B	C	7O
R2055	B	C	7O
R2056	A	D	9O
R2057	B	C	8P
R2058	B	C	8P
R2059	B	C	8P
R2060	B	C	8P
R2061	B	C	6K
R2062	B	C	6J
R2063	B	C	6K
R2064	B	C	6J
R2065	B	C	6J
R2201	B	C	17N
R2202	B	C	13K
R2203	B	C	13K
R2204	B	C	13K
R2205	B	C	13K
R2206	B	C	15K
R2207	B	C	15K
R2213	B	C	14K
R2215	B	C	14L
R2217	B	C	14L
R2218	B	C	15L
R2219	B	C	15L
R2220	B	C	15M
R2222	B	C	14L
R2223	B	C	14L
R2224	B	C	14L
R2225	B	C	14L
R2232	B	C	17N
R2233	B	C	15K
R2234	B	C	16L
R2235	A	D	14L
R2236	B	C	14L
R2237	A	D	16K
R2251	A	D	16N
R3003	B	C	12D
R3004	B	C	8D
R3005	B	C	12D
R3006	B	C	14C
R3007	B	C	12D
R3008	A	D	12C
R3013	B	C	15C
R3014	B	C	13D
R3015	B	C	14C
R3017	B	C	13D
R3018	B	C	12E
R3019	B	C	15D
R3020	B	C	15D
R3021	B	C	13D
R3022	B	C	13D
R3026	B	C	14E
R3027	B	C	14E
R3028	B	C	13E
R3030	B	C	14F
R3031	B	C	14E
R3032	B	C	13E
R3035	B	C	13F
R3042	B	C	13G
R3043	B	C	12G
R3044	B	C	13G
R3045	B	C	13G
R3056	B	C	11F
R3057	B	C	10F
R3058	B	C	10F
R3059	B	C	8G
R3060	B	C	10F
R3078	B	C	8E
R3080	B	C	9E
R3081	B	C	8E
R3082	B	C	9D
R3083	B	C	9D
R3085	B	C	7E
R3086	B	C	7D
R3087	B	C	8D
R3088	B	C	9D
R3089	B	C	9D
R3090	B	C	10D
R3091	B	C	10D
R3092	B	C	10D
R3093	B	C	10D
R3094	B	C	9D
R3095	B	C	10D
R3096	B	C	10D
R3097	B	C	10D
R3098	B	C	11D
R3099	B	C	9D
R3100	B	C	11D
R3201	B	C	5M
R3202	B	C	5N
R3203	B	C	5N
R3204	A	D	6N
R3205	A	D	6F
R3206	B	C	9F
R3207	B	C	9F
R3208	B	C	9F
R3209	A	D	12H
R3210	A	D	8F
R3211	B	C	16D
R3212	B	C	16E
R3213	B	C	16E
R3214	B	C	9G
R3215	B	C	8G
R3216	A	D	6H
R3217	B	C	13G
R3218	B	C	6F
R3219	A	D	16D
R3220	B	C	14D
R3221	B	C	5M
R3222	B	C	14D
R3223	B	C	12F
R3224	B	C	13F
R3226	B	C	16B
R3227	B	C	16B
R3232	B	C	4D
R3233	B	C	4D
R3234	A	D	4G
R3235	A	D	8P
R3236	B	C	15C
R3237	B	C	14C
R3238	B	C	14C
R3240	B	C	2C
R3241	B	C	2C
R3242	B	C	12F
R3243	A	D	15H
R3244	B	C	16D
R4001	B	C	13F
R4002	B	C	11G
R4003	B	C	10F
R4004	B	C	15D
R4006	B	C	13E
R4010	B	C	9E
R4011	B	C	9E
R4012	B	C	8E
R4018	B	C	10F
R4019	B	C	9G
R4020	B	C	10G
R4021	B	C	9G
R4022	B	C	5F
R4024	A	D	8G
R4025	B	C	11H
R5001	A	D	3P
R5101	A	D	1L
R5102	A	D	1M
R5103	A	D	2M
R5104	A	D	1N
R5106	A	D	2L
R5107	A	D	3L
R5108	B	C	4L
R5109	B	C	3M
R5110	B	C	2L
R5113	B	C	2M
R5301	B	C	4I
R5302	B	C	4I
R5303	B	C	4H
R5304	B	C	4H
R5305	B	C	2E
R5306	B	C	2E
R5307	B	C	2G
R5308	B	C	2E
R5309	B	C	3E
R5310	B	C	3E
R5311	B	C	3D
R5312	B	C	4E
R5313	B	C	4F
R5314	B	C	3F
R5315	B	C	4F
R5316	B	C	4E
R5317	A	D	4H
R5318	A	D	1G
R5320	B	C	4H
R5321	A	D	4G
R5324	B	C	2E
R5325	A	D	2E
R5326	A	D	1F
R5327	B	C	1F
R5328	B	C	1F
R5330	B	C	1I
R5332	A	D	3G
R5333	A	D	2C
R5334	A	D	1C
R5335	B	C	3H
R5336	B	C	4H
R5337	B	C	3H
R5338	B	C	3F
R5339	B	C	3E
R5340	B	C	4E
R5341	B	C	4F
R5342	B	C	3F
R5343	B	C	3D
R6020	B	C	21N
R6021	B	C	21N
R6023	B	C	21M
R6030	B	C	22I
R6031	B	C	22L
R6032	B	C	21L
R6033	B	C	20K
R6034	B	C	22I
R6050	A	D	21O
R6051	A	D	21O
R6053	B	C	19P
R6508	A	D	20J
R6509	B	C	20K
R6510	B	C	20K
R6511	B	C	20K
R6551	B	C	20L
R6552	B	C	20L
R6601	B	C	20J
R6602	B	C	20J
R6607	B	C	20H
R6608	B	C	21I
R6609	B	C	21H
R6628	B	C	21H
R6629	B	C	21H
R6650	B	C	22F
R6651	B	C	22E
R6652	B	C	22E
R6653	B	C	21E
R6654	A	D	21E
R6655	B	C	21E
R6656	B	C	21E
R6657	B	C	21F
R6658	B	C	21E
R6659	B	C	21E
R6660	B	C	22E
R6661	B	C	21E
R7001	B	C	10B
R7002	B	C	11B
R7003	B	C	11B
R7004	B	C	11B
R7005	B	C	11B
R7006	B	C	11B
R7007	B	C	11C
R7008	B	C	13C
R7009	A	D	14B
R7010	B	C	8A
R7011	B	C	10B
R7012	A	D	7A
R7013	B	C	10B
R7014	B	C	11B
R7015	B	C	5A
R7016	B	C	2B
R7017	B	C	16A
R7018	B	C	15A
R7019	B	C	6B
R7020	B	C	17A
R7021	B	C	17A
R7022	B	C	7A
R7023	B	C	5A
R7024	B	C	3B
R7025	B	C	5A
R7026	A	D	8B
R7030	B	C	17A
R7031	B	C	6A
R7032	B	C	3A
R7033	B	C	2B
R7034	B	C	1B
R7035	B	C	2B
R7036	B	C	2B
R7037	B	C	2B
R7040	B	C	2C
R7041	B	C	2C
R7042	B	C	2B
R7043	B	C	2C
R7044	B	C	5C
R7151	B	C	18P
R7152	B	C	19O
R7155	B	C	6D
R7156	B	C	18O
R7202	B	C	19L
R7203	B	C	19L
R7204	A	D	19M
VR6601	A	D	19K
SWITCH			
S3001	A	D	18C
S3002	A	D	6F
S6050	A	D	18P
S7001	A	D	22B
S7002	A	D	18B
S7004	A	D	7B
S7006	A	D	6B
S7008	A	D	5B
S7010	A	D	4B
S7011	A	D	4B
S7012	A	D	3B
S7013	A	D	2B
S7014	A	D	2B
S7015	A	D	1B
S7016	A	D	17B
TEST POINT			
TP106	A	D	6P
TP111	A	D	5P
TP2253	A	D	6P
TP4001	A	D	6P
TP7001	A	D	3A
TPGND	A	D	4A
OTHER			
BT3001	A	D	3C
CF6031	A	D	22K
CP501	A	D	21G
CP4001	A	D	4G
CP5301	A	D	4E
CP5302	A	D	4G
DI7001	A	D	12A
DI7002	A	D	12A
F5001	A	D	2N
FC5001	A	D	2P
FC5002	A	D	2N
FW3001	A	D	21N
FW3002	A	D	19M
FW3003	A	D	20M
FW7104	A	D	18O
FW7105	A	D	6E
FW7106	A	D	4C
K2251	B	C	15N
K2252	B	C	15N
K2253	B	C	15N
K5101	A	D	2M
K5102	A	D	1N
K5301	A	D	3G
LF5002	A	D	4O
PC3001	A	D	16F
PC3002	A	D	8G
PC5101	A	D	4L
SG5001	A	D	1P
T2051	A	D	7O
T2052	A	D	6K
T5001	A	D	1K
TU6001	A	D	22P
VA5001	A	D	1P
VA5002	A	D	3P
X1	A	D	11L
X2	A	D	11L
X3001	A	D	13F
X3002	A	D	13F

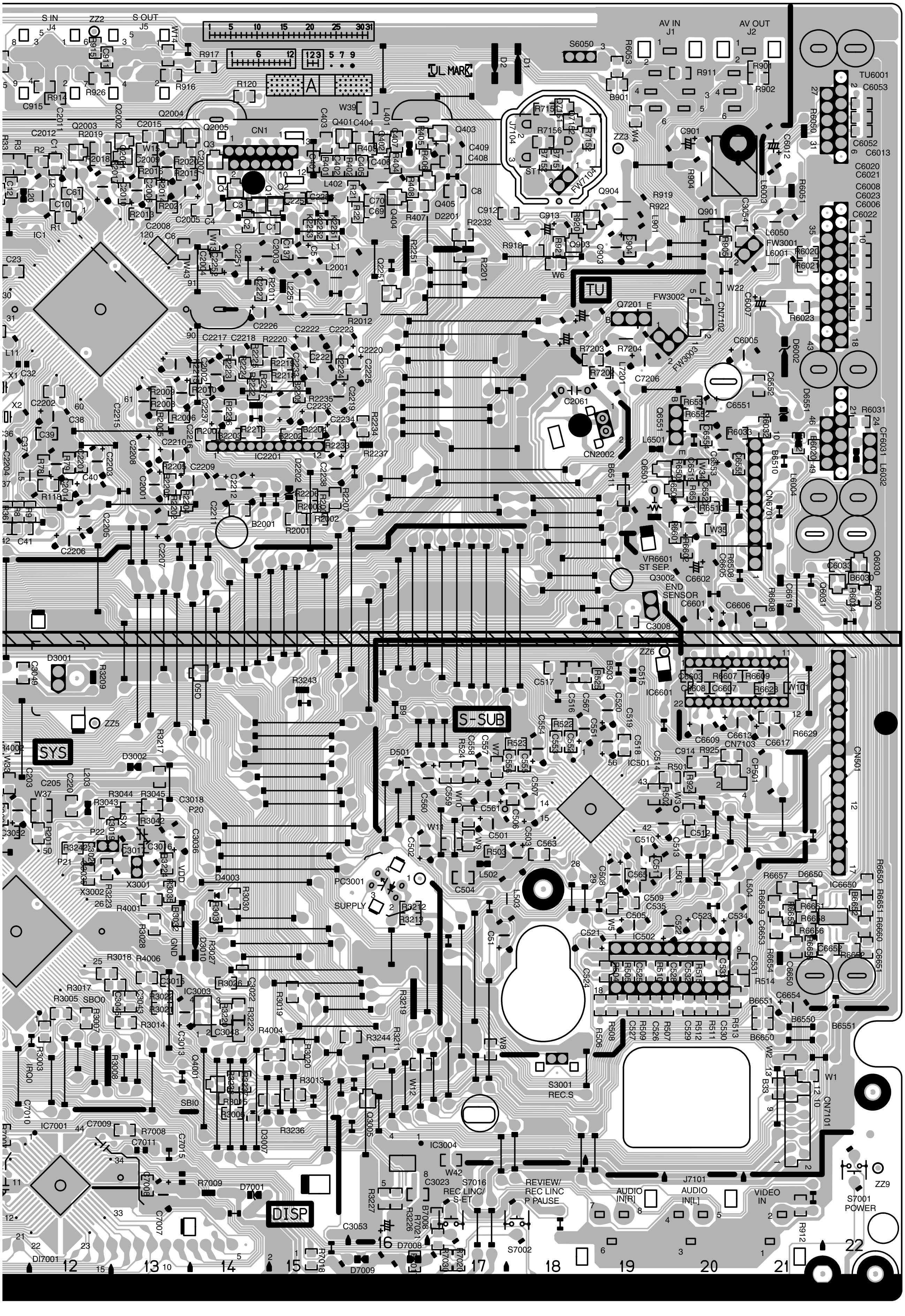
4.1 MAIN, R.PAUSE, C.BOX CTL CIRCUIT BOARDS

<03> MAIN, <91> R.PAUSE, <92> C.BOX CTL
LPB10134-001F

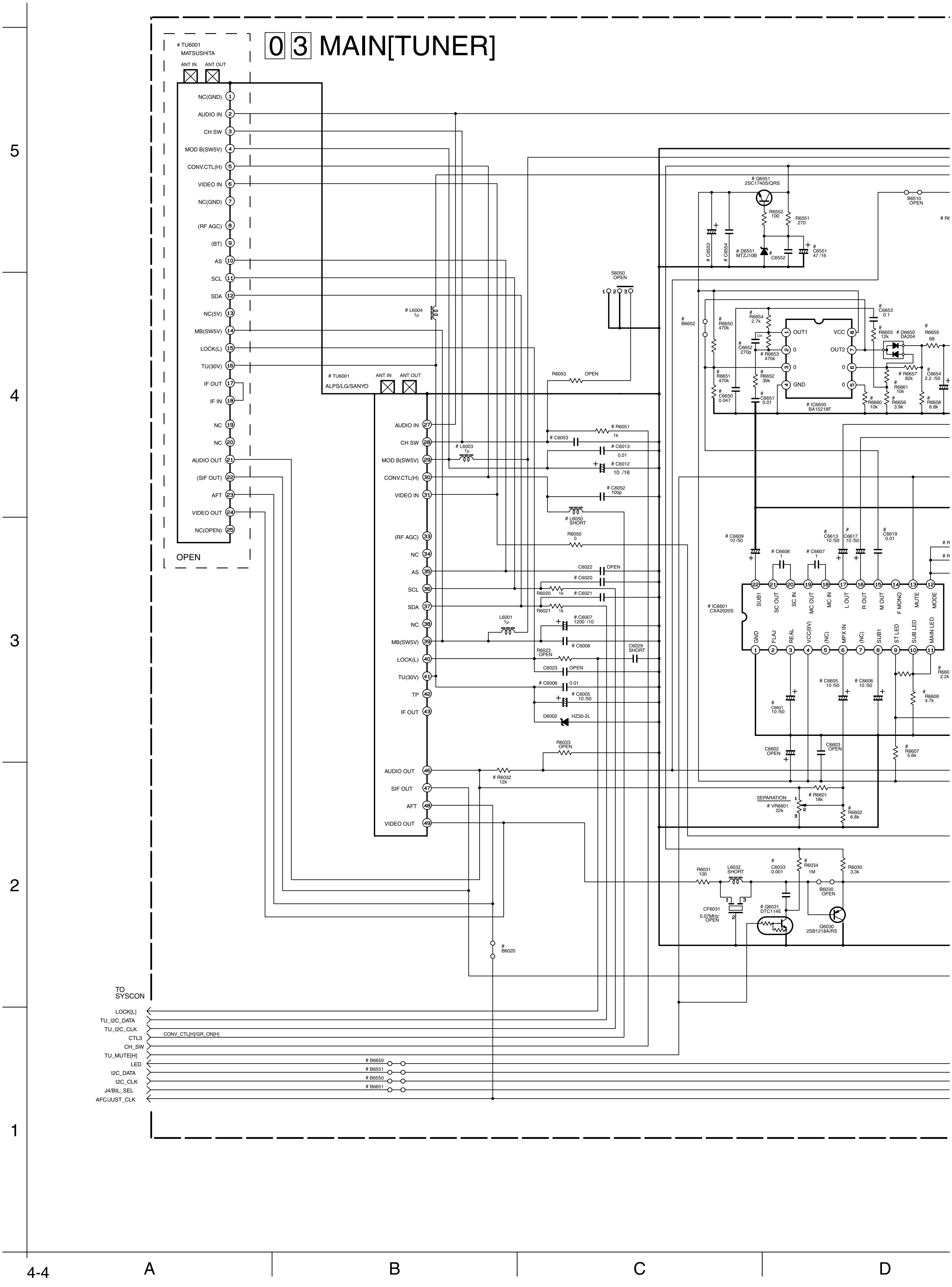


DANGEROUS VOLTAGE

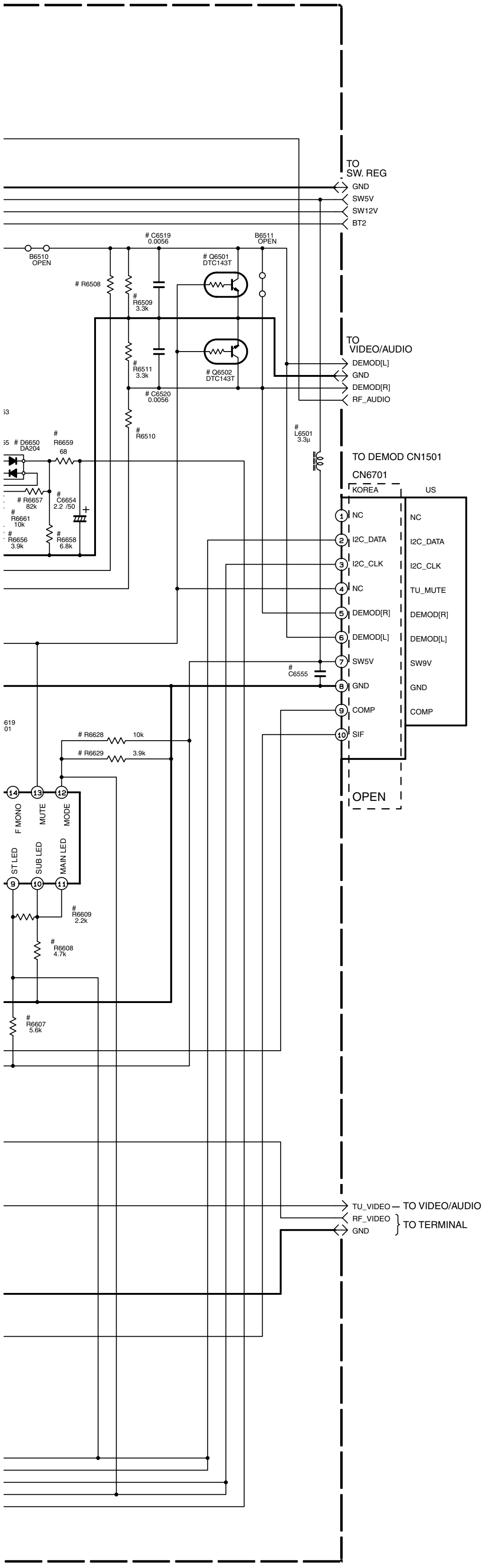
CAUTION :
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE AND RATED FUSE(S).
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE CP(S) MANUFACTURED BY ROHM.
ATTENTION :
REPLACER PAR DES FUSIBLE DE MEME TYPE.



4.2 MAIN (TUNER/DEMOD) SCHEMATIC DIAGRAM



Note : *The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.*



# DIFFERENCE TABLE

○ :Used
✕ :Not used

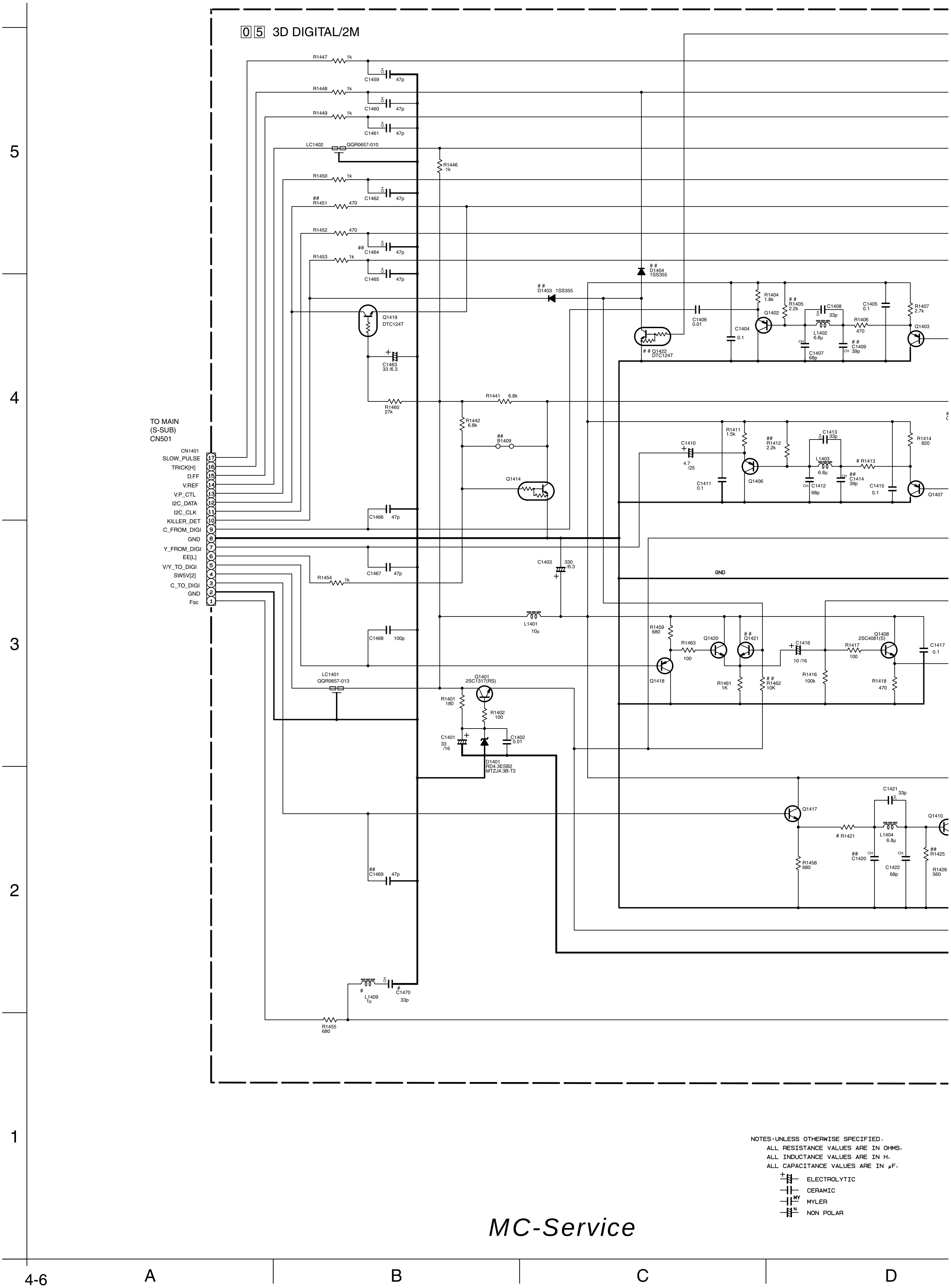
		JPN	US	KR
TUNER				
AFC	B6020	✕	○	○
MUTE	Q6031,R6034,C6033	✕	✕	✕
RF CONV	L6003,L6050, R6050,R6051	✕	○	○
US AUDIO	R6032	✕	○	✕
5V	C6007	○	✕	✕
	C6005,C6008,C6012, C6013,C6020,C6021, C6052,C6053	✕	✕	✕
DEMOD				
UNIT	CN6701	✕	US	KR
MUTE	Q6501,Q6502	✕	✕	✕
REG	Q6551,D6551, R6551,R6552	○	○	✕
I2C	B6550,B6551	✕	○	○
AUDIO OUT	R6508,R6510	12k	0	0
	R6509,R6511, C6519,C6520	○	✕	✕
JPN	IC6601,IC6650, D6650,VR6601, R6607-R6609, R6628,R6629, R6650-R6661,C6601, C6605-C6609,C6613, C6617,C6619, C6650-C6654 B6650,B6651	○	✕	✕
KR	L6501	✕	✕	○

NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN µF.
ELECTROLYTIC
CERAMIC
MYLER
NON POLAR

MC-Service

p10345001a_rev2

4.3 3D DIGITAL/2M SCHEMATIC DIAGRAM



NOTES: UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN µF.

ELECTROLYTIC
CERAMIC
MY MYLER
N NON POLAR

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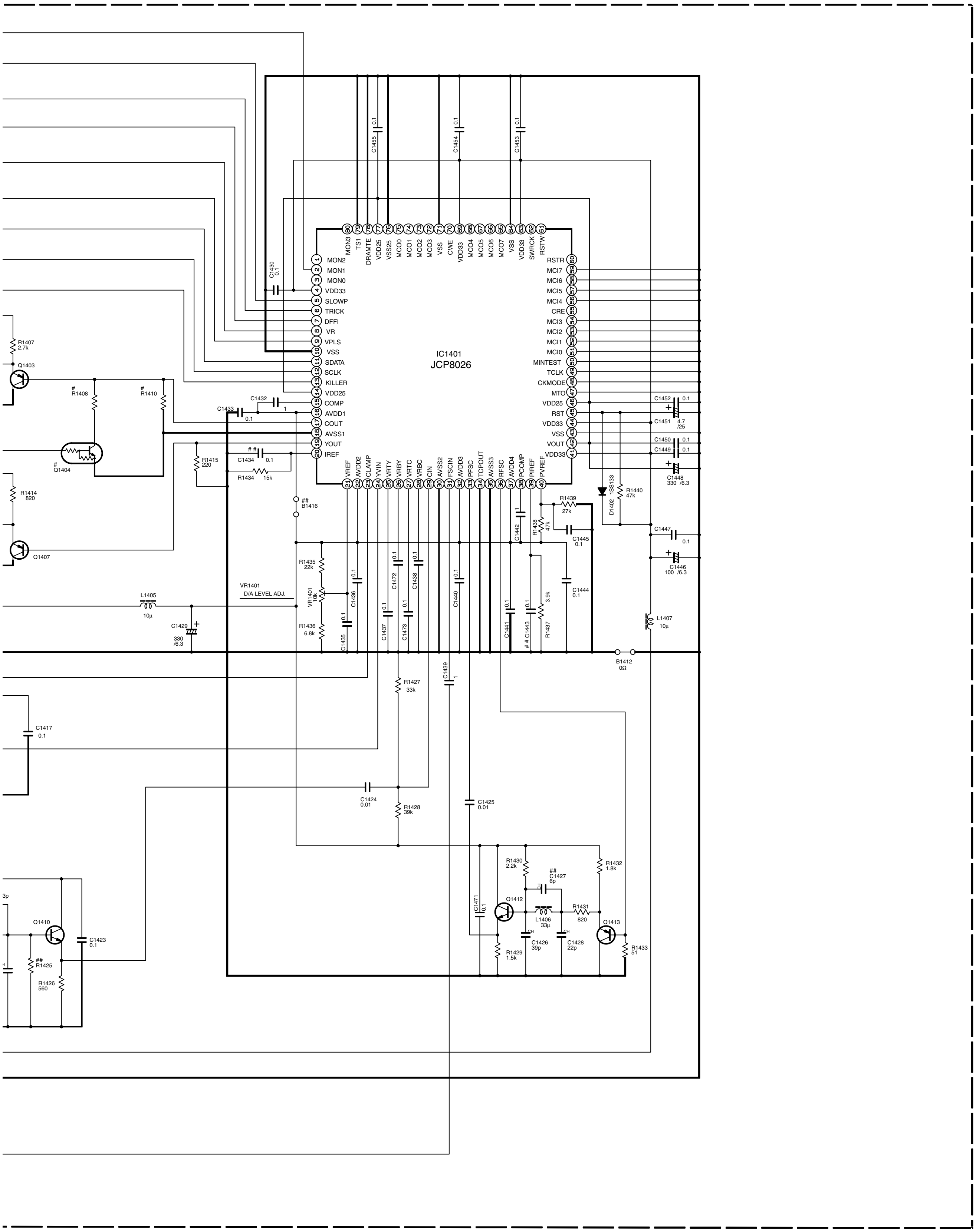
Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



## MARK ELEMENTS ARE NOT MOUNTED.
ALL SINGLE DIODE:1SS133 OR 1N4148.
ALL PNP TRANSISTOR:2SA1576A(QR) OR 2SB1218A(QR) OR 2PA1576(R)
ALL NPN TRANSISTOR:2SC4081(QRS) OR 2SD1819A(QRS) OR 2PC4081(R)
ALL NPN DIGITAL TRANSISTOR:DTC144WUA OR UN521E OR RN1309

# DIFFERENCE TABLE

○ Used
✕ Not used

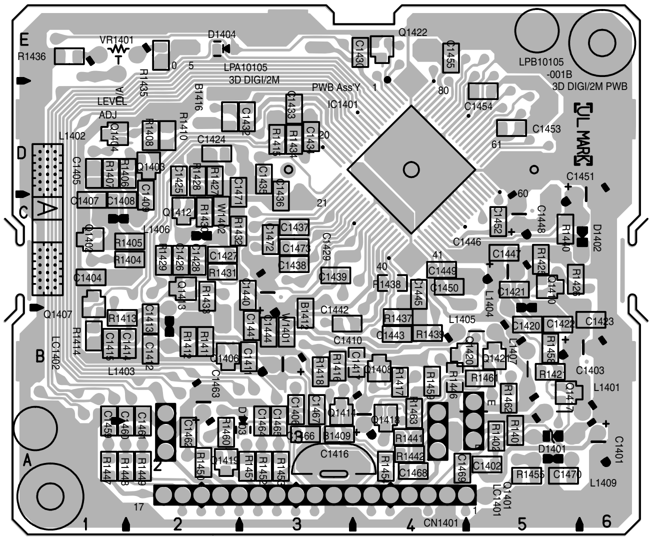
	Q1404	R1408	R1410	R1413	R1421	C1470	L1409	
PAL/MS	○	1.2k	390	330	390	33p	1u	
NTSC	✕	OPEN	240	470	330	OPEN	OPEN	

MC-Service

p10276001a_rev1

4.4 3D DIGITAL/2M CIRCUIT BOARD

<05> 3D DIGITAL/2M
LPB10105-001B



COMPONENT PARTS LOCATION GIDE <3D DIGITAL/2M>

REF.NO.	LOCATION		
CAPACITOR			
C1401	A	D	6A
C1402	B	C	5A
C1403	A	D	5B
C1404	B	C	1C
C1405	B	C	1D
C1406	B	C	3B
C1407	B	C	1C
C1408	B	C	1C
C1409	B	C	2C
C1410	A	D	3B
C1411	B	C	3B
C1412	B	C	2B
C1413	B	C	2B
C1414	B	C	2B
C1415	B	C	1B
C1416	A	D	4A
C1417	B	C	4B
C1420	B	C	5B
C1421	B	C	5C
C1422	B	C	5B
C1423	B	C	6B
C1424	B	C	2D
C1425	B	C	2D
C1426	B	C	2C
C1427	B	C	2C
C1428	B	C	2C
C1429	A	D	3C
C1430	B	C	4E
C1432	B	C	3D
C1433	B	C	3D
C1434	B	C	3D
C1435	B	C	3D
C1436	B	C	3C
C1437	B	C	3C
C1438	B	C	3C
C1439	B	C	3C
C1440	B	C	3C
C1441	B	C	3B
C1442	B	C	3B
C1443	B	C	4B
C1444	B	C	3B
C1445	B	C	4C
C1446	A	D	5C
C1447	B	C	5C
C1448	A	D	5C
C1449	B	C	4C
C1450	B	C	4C
C1451	A	D	5D
C1452	B	C	5C
C1453	B	C	5D
C1454	B	C	5D
C1455	B	C	4E
C1459	B	C	1B
C1460	B	C	2B
C1461	B	C	2B
C1462	B	C	2A
C1463	A	D	2B
C1464	B	C	3B
C1465	B	C	3B
C1466	B	C	3A
C1467	B	C	3B
C1468	B	C	4A
C1469	B	C	4A
C1470	B	C	5A
C1471	B	C	2D
C1472	B	C	3C
C1473	B	C	3C
CONNECTOR			
CN1401	A	D	5A
DIODE			
D1401	A	D	5A
D1402	A	D	6C
D1403	B	C	3B
D1404	B	C	2E
IC			
IC1401	B	C	4D
COIL			
L1401	A	D	5B
L1402	A	D	2C
L1403	A	D	2B
L1404	A	D	5C
L1405	A	D	4B
L1406	A	D	2C
L1407	A	D	5B
L1409	A	D	5A
TRANSISTOR			
Q1401	A	D	5B
Q1402	B	C	1C
Q1403	B	C	2D
Q1404	B	C	1D
Q1406	B	C	2B
Q1407	B	C	1C
Q1408	B	C	4B
Q1410	B	C	5C
Q1412	B	C	2C
Q1413	B	C	2C
Q1414	B	C	3B
Q1417	B	C	5B
Q1418	B	C	4B
Q1419	B	C	2A
Q1420	B	C	4B
Q1421	B	C	5B
Q1422	B	C	4E
RESISTOR			
R1401	B	C	5A
R1402	B	C	5A
R1404	B	C	2C
R1405	B	C	2C
R1406	B	C	2D
R1407	B	C	1D
R1408	B	C	2D
R1410	B	C	2D
R1411	B	C	2B
R1412	B	C	2B
R1413	B	C	1B
R1414	B	C	1B
R1415	B	C	3D
R1416	B	C	3B
R1417	B	C	4B
R1418	B	C	3B
R1421	B	C	5B
R1425	B	C	5C
R1426	B	C	5C
R1427	B	C	2D
R1428	B	C	2D
R1429	B	C	2C
R1430	B	C	2C
R1431	B	C	2C
R1432	B	C	2C
R1433	B	C	2C
R1434	B	C	3D
R1435	B	C	2E
R1436	B	C	1E
R1437	B	C	4B
R1438	B	C	4C
R1439	B	C	4B
R1440	B	C	5C
R1441	B	C	4A
R1442	B	C	4A
R1446	B	C	4B
R1447	B	C	1A
R1448	B	C	2A
R1449	B	C	2A
R1450	B	C	2A
R1451	B	C	3A
R1452	B	C	3A
R1453	B	C	3A
R1454	B	C	4A
R1455	B	C	5A
R1458	B	C	5B
R1459	B	C	4B
R1460	B	C	2A
R1461	B	C	5B
R1462	B	C	5B
R1463	B	C	4B
VR1401	A	D	1E
OTHER			
LC1401	A	D	4A
LC1402	A	D	2A

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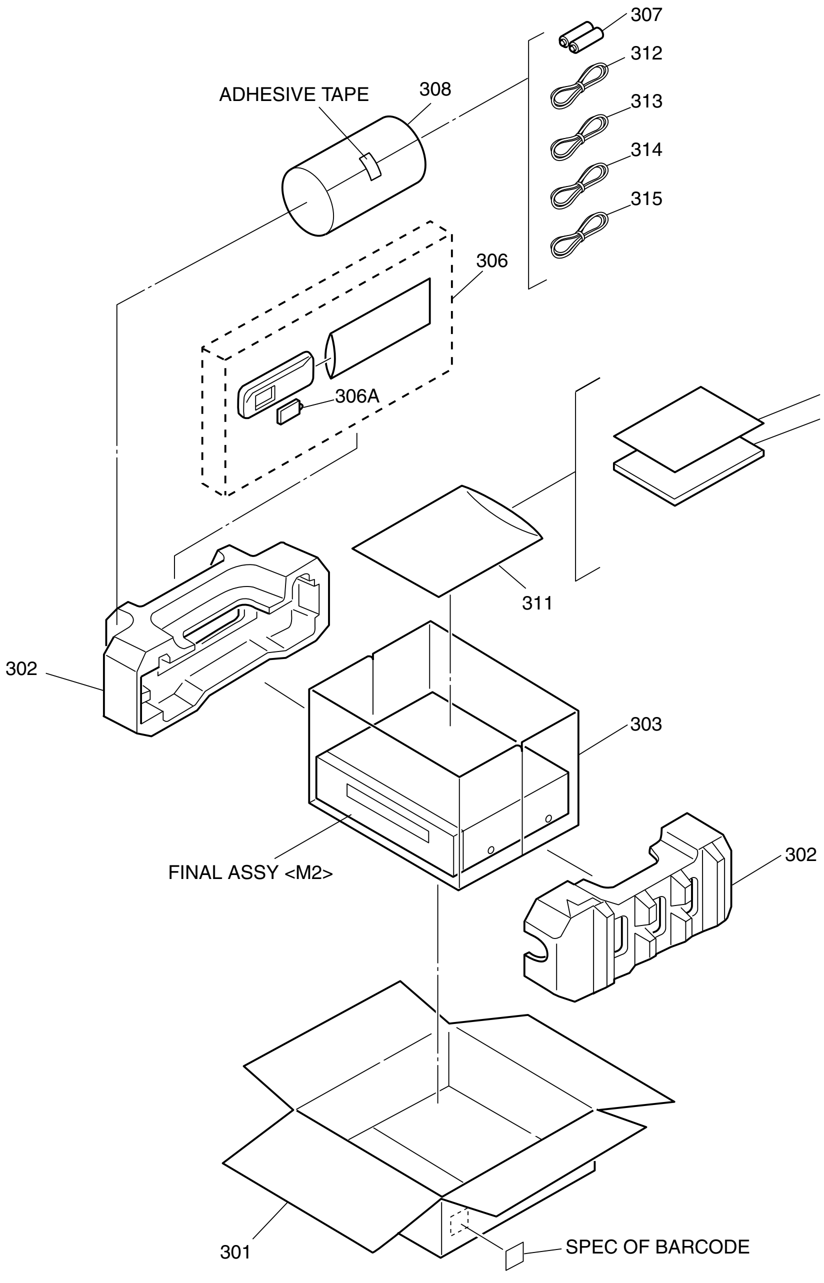
SECTION 5
PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

5.1 PACKING AND ACCESSORY ASSEMBLY <M1>

The instruction manual to be provided with this product will differ according to the destination.



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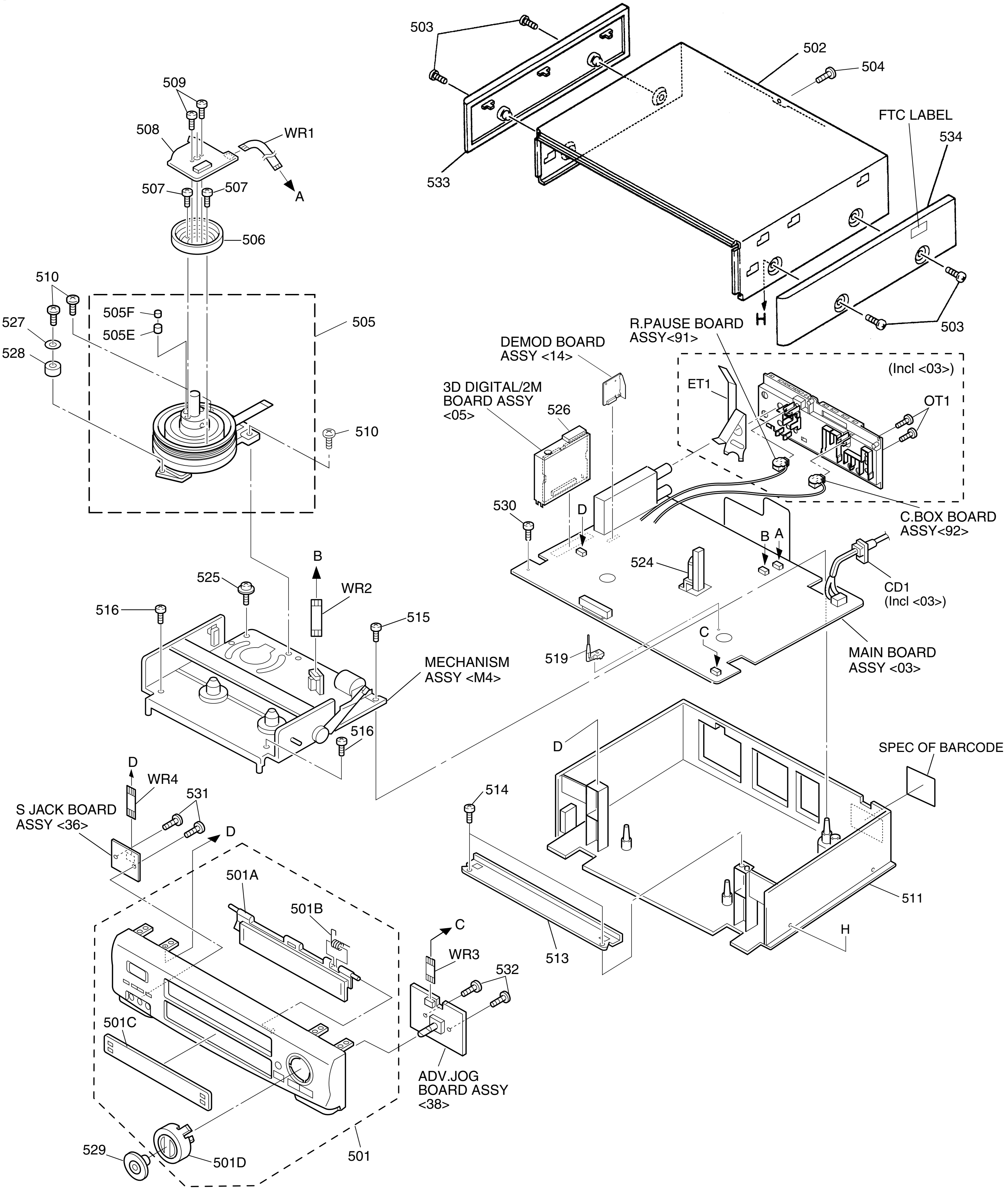
PACKING AND ACCESSORY ASSEMBLY <M1>

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION
		301	LP30943-001A	PACKING CASE
		302	LP30536-002A	CUSHION ASSY
		303	PQM30021-103	POLY BAG
		306	LP20303-015A	REMOTE CONTROLLER
		306A	LP40225-002A	COVER(BATTERY)
		307	–	BATTERY,X2(“AA” TYPE)
		308	QPC02202230P	POLY BAG
	⚠	310	LPT0504-001A	INST.BOOK(EN)
	⚠		LPT0504-002A	INST.BOOK(FR),S7900U(C)
		311	QPC02503530P	POLY BAG
		312	PEAC0294-04	RF CABLE
		313	QAM0004-002	S CABLE
		314	QAM0174-001	CABLE ASSY(AUDIO/VIDEO)
		315	QAL0095-005	LED CABLE ASSY
		317	BT-51020-2	REGIST.CARD

5.2 FINAL ASSEMBLY <M2>

BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.



MC-Service

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FINAL ASSEMBLY <M2>

# ⚠	REF No.	PART No.	PART NAME, DESCRIPTION
⚠	501	LP10289-064C	FRONT PANEL ASSY
	501A	LP20868-005A	CASSETTE DOOR
	501B	PQ46448	TORSION SPRING
	501C	LP20869-094B	DISPLAY WINDOW
	501D	LP21014-001C	ORNAMENT
⚠	502	LP10013-057B	TOP COVER
	503	QYTDSF3010M	SCREW,X4 TOP COVER(SIDE)
	504	QYTDSF3010M	SCREW,TOP COVER(REAR)
	505	LP20981-012A	DRUM SUB ASSY
	505E	LP40323-001A	CONTACT
	505F	LP30004-014A	COMPRESSION SPRING
	506	PDZ0179-1-4	ROTOR ASSY
	507	QYSPSP3006Z	SCREW,X2
⚠	508	QAR0169-002	STATOR ASSY
	509	QYSPSPH2606Z	SCREW,X2
	510	QYTDST2610Z	SCREW,X3 DRUM
⚠	511	LP10108-012F	BOTTOM CHASSIS
	513	LP30312-001B	BRACKET(CHASSIS)
	514	QYTDSF3010Z	SCREW,X2
	515	QYTDSF4012Z	SCREW,MECHA
	516	QYTDSF3010Z	SCREW,X2 MECHA
	519	LP40407-001A	KNOB ASSY
	524	LP40253-001B	STOPPER
	525	PQ40413	SPECIAL SCREW,MECHA
	526	LP30002-088B	SPACER,SHIELD FRAME
	527	QYWWS267505Z	WASHER
	528	LP30017-021A	SPACER
	529	LP30954-001A	KNOB ASSY, FRONT
	530	QYTDSF3010Z	SCREW,MAIN
	531	QYTDSF2608Z	SCREW,X2 S JACK
	532	QYTDSF2608Z	SCREW,X2 ADV.JOG
	533	LP10389-001B	SIDE PANEL(L)
	534	LP10390-001B	SIDE PANEL(R)
	WR1	QUQ212-0518CG	FFC WIRE,DRUM CN3002
	WR2	WJT0005-002A	E-CARD WIRE,A/C HEAD CN2001
	WR3	QUQ112-0914CG	FFC WIRE,FRONT CN7001
	WR4	WJT0026-001A	E-CARD WIRE,S(FSA) CN7103

# ⚠	REF No.	PART No.	PART NAME, DESCRIPTION

5.3 ELECTRICAL PARTS LIST

****

3D DIGITAL/2M BOARD ASSEMBLY <05>

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PW1	LPA10105-02A	3D DIGITAL/2M BOARD ASSY	
IC1401	JCP8026	IC	
Q1401	2SC1317/RS/-T	TRANSISTOR	
Q1402	2SA1576A/QR/-X	TRANSISTOR	
	or 2PA1576/R/-X	TRANSISTOR	
Q1403	2SA1576A/QR/-X	TRANSISTOR	
	or 2PA1576/R/-X	TRANSISTOR	
Q1406	2SA1576A/QR/-X	TRANSISTOR	
	or 2PA1576/R/-X	TRANSISTOR	
Q1407	2SA1576A/QR/-X	TRANSISTOR	
	or 2PA1576/R/-X	TRANSISTOR	
Q1408	2SC4081/S/-X	TRANSISTOR	
Q1410	2SC4081/QRS/-X	TRANSISTOR	
	or 2PC4081/R/-X	TRANSISTOR	
Q1412	2SC4081/QRS/-X	TRANSISTOR	
	or 2PC4081/R/-X	TRANSISTOR	
Q1413	2SA1576A/QR/-X	TRANSISTOR	
	or 2PA1576/R/-X	TRANSISTOR	
Q1414	DTC144WU	TRANSISTOR	
	or RN1309	TRANSISTOR	
	or UN521E	TRANSISTOR	
Q1417	2SC4081/QRS/-X	TRANSISTOR	
	or 2PC4081/R/-X	TRANSISTOR	
Q1418	2SA1576A/QR/-X	TRANSISTOR	
	or 2PA1576/R/-X	TRANSISTOR	
Q1419	DTC124TU	TRANSISTOR	
Q1420	2SC4081/QRS/-X	TRANSISTOR	
	or 2PC4081/R/-X	TRANSISTOR	
D1401	RD4.3ES/B2/-T2	ZENER DIODE	
	or MTZJ4.3B	ZENER DIODE	
D1402	1SS133	DIODE	
	or 1N4148M	DIODE	
R1401	NRSA02J-181X	MG RESISTOR	180Ω,1/10W
R1402	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R1404	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
R1406	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R1407	NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W
R1410	NRSA02J-241X	MG RESISTOR	240Ω,1/10W
R1411	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
R1413	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R1414	NRSA02J-821X	MG RESISTOR	820Ω,1/10W
R1415	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
R1416	NRSA02J-104X	MG RESISTOR	100kΩ,1/10W
R1417	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R1418	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R1421	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
R1426	NRSA02J-561X	MG RESISTOR	560Ω,1/10W
R1427	NRSA02J-333X	MG RESISTOR	33kΩ,1/10W
R1428	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
R1429	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
R1430	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R1431	NRSA02J-821X	MG RESISTOR	820Ω,1/10W
R1432	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
R1433	NRSA02J-510X	MG RESISTOR	51Ω,1/10W
R1434	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
R1435	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
R1436	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R1437	NRSA02J-392X	MG RESISTOR	3.9kΩ,1/10W
R1438	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R1439	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
R1440	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R1441	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R1442	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R1446	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R1447	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R1448	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R1449	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R1450	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R1452	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R1453	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R1454	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R1455	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
R1458	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
R1459	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
R1460	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
R1461	NRSA02J-121X	MG RESISTOR	120Ω,1/10W
R1463	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
VR1401	QVZ3521-103Z	V RESISTOR	
B1412	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
C1401	QEKJ1CM-336	E CAPACITOR	33µF,16V
C1402	NCB21HK-103X	CAPACITOR	0.01µF,50V
C1403	QEKJ0JM-337	E CAPACITOR	330µF,6.3V
C1404	NCF21EZ-104X	CAPACITOR	0.1µF,25V
C1405	NCF21EZ-104X	CAPACITOR	0.1µF,25V
C1406	NCB21HK-103X	CAPACITOR	0.01µF,50V
C1407	NDC21HJ-680X	CAPACITOR	68pF,50V
C1408	NDC21HJ-330X	CAPACITOR	33pF,50V
C1410	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
C1411	NCF21EZ-104X	CAPACITOR	0.1µF,25V
C1412	NDC21HJ-680X	CAPACITOR	68pF,50V
C1413	NDC21HJ-330X	CAPACITOR	33pF,50V
C1415	NCF21EZ-104X	CAPACITOR	0.1µF,25V
C1416	QEKJ1CM-106	E CAPACITOR	10µF,16V
C1417	NCF21EZ-104X	CAPACITOR	0.1µF,25V
C1421	NDC21HJ-330X	CAPACITOR	33pF,50V
C1422	NDC21HJ-680X	CAPACITOR	68pF,50V
C1423	NCF21EZ-104X	CAPACITOR	0.1µF,25V
C1424	NCB21HK-103X	CAPACITOR	0.01µF,50V
C1425	NCB21HK-103X	CAPACITOR	0.01µF,50V
C1426	NDC21HJ-390X	CAPACITOR	39pF,50V
C1428	NDC21HJ-220X	CAPACITOR	22pF,50V
C1429	QEKJ0JM-337	E CAPACITOR	330µF,6.3V
C1430	NCF21EZ-104X	CAPACITOR	0.1µF,25V
C1432	NCF21CZ-105X	CAPACITOR	1µF,16V
C1433	NCF21EZ-104X	CAPACITOR	0.1µF,25V
C1435	NCF21EZ-104X	CAPACITOR	0.1µF,25V
C1436	NCF21EZ-104X	CAPACITOR	0.1µF,25V
C1437	NCF21EZ-104X	CAPACITOR	0.1µF,25V
C1438	NCF21EZ-104X	CAPACITOR	0.1µF,25V
C1439	NCF21CZ-105X	CAPACITOR	1µF,16V
C1440	NCF21EZ-104X	CAPACITOR	0.1µF,25V
C1441	NCF21EZ-104X	CAPACITOR	0.1µF,25V
C1442	NCF21CZ-105X	CAPACITOR	1µF,16V
C1444	NCF21EZ-104X	CAPACITOR	0.1µF,25V
C1445	NCF21EZ-104X	CAPACITOR	0.1µF,25V
C1446	QEKJ0JM-107	E CAPACITOR	100µF,6.3V
C1447	NCF21EZ-104X	CAPACITOR	0.1µF,25V
C1448	QEKJ0JM-337	E CAPACITOR	330µF,6.3V

# ⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C1449	NCF21EZ-104X	CAPACITOR	0.1μF,25V
	C1450	NCF21EZ-104X	CAPACITOR	0.1μF,25V
	C1451	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
	C1452	NCF21EZ-104X	CAPACITOR	0.1μF,25V
	C1453	NCF21EZ-104X	CAPACITOR	0.1μF,25V
	C1454	NCF21EZ-104X	CAPACITOR	0.1μF,25V
	C1455	NCF21EZ-104X	CAPACITOR	0.1μF,25V
	C1459	NDC21HJ-470X	CAPACITOR	47pF,50V
	C1460	NDC21HJ-470X	CAPACITOR	47pF,50V
	C1461	NDC21HJ-470X	CAPACITOR	47pF,50V
	C1462	NDC21HJ-470X	CAPACITOR	47pF,50V
	C1463	QEKJ0JM-336	E CAPACITOR	33μF,6.3V
	C1465	NDC21HJ-470X	CAPACITOR	47pF,50V
	C1466	NDC21HJ-470X	CAPACITOR	47pF,50V
	C1467	NDC21HJ-470X	CAPACITOR	47pF,50V
	C1468	NDC21HJ-101X	CAPACITOR	100pF,50V
	C1471	NCF21EZ-104X	CAPACITOR	0.1μF,25V
	C1472	NCF21EZ-104X	CAPACITOR	0.1μF,25V
	C1473	NCF21EZ-104X	CAPACITOR	0.1μF,25V
	L1401	QQL29BJ-100Z	COIL	10μH
	L1402	QQL071J-6R8Y	COIL	6.8μH
	L1403	QQL071J-6R8Y	COIL	6.8μH
	L1404	QQL071J-6R8Y	COIL	6.8μH
	L1405	QQL29BJ-100Z	COIL	10μH
	L1406	QQL071J-330Y	COIL	33μH
	L1407	QQL29BJ-100Z	COIL	10μH
	LC1401	QQR0657-013Z	NOISE FILTER	
	LC1402	QQR0657-010Z	NOISE FILTER	
	SD1	LP30706-001C	SHIELD FRAME(S-VHS)	
	SD2	LP30684-001A	SHIELD CASE(S-VHS)	
	CN1401	QGG2502K1-17	HEADER PIN	

# ⚠	REF No.	PART No.	PART NAME, DESCRIPTION

JVC SERVICE & ENGINEERING COMPANY OF AMERICA

DIVISION OF JVC AMERICAS CORP.

Head office	:	1700 Valley Road Wayne, New Jersey 07470-9976	(973)315-5000
East Coast	:	10 New Maple Avenue Pine Brook, New Jersey 07058-9641	(973)396-1000
Midwest	:	705 Enterprise Street Aurora, Illinois 60504-8149	(630)851-7855
West Coast	:	5665 Corporate Avenue Cypress, California 90630-0024	(714)229-8011
Atlanta	:	1500 Lakes Parkway Lawrenceville, Georgia 30043-5857	(770)339-2582
Hawaii	:	2969 Mapunapuna Place Honolulu, Hawaii 96819-2040	(808)833-5828

JVC CANADA INC.

Head office	:	21 Finchdene Square Scarborough, Ontario M1X 1A7	(416)293-1311
Montreal	:	16800 Rte Trans-Canadienne, Kirkland, Quebec H9H 5G7	(514)871-1311
Vancouver	:	13040 Worster Court Richmond, B.C. V6V 2B3	(604)270-1311

JVC

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JVC

HR-S3900U/S5900U

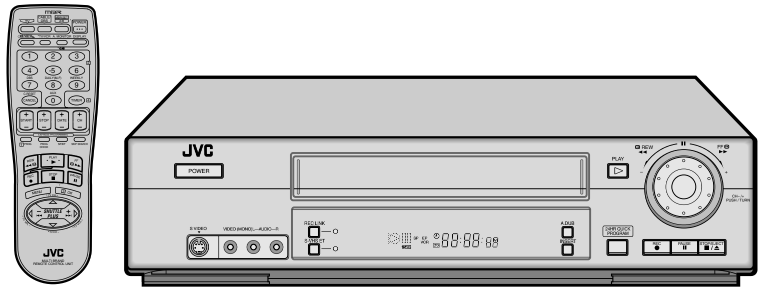
No. 82848

JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-S3900U/U(C), HR-S5900U/U(C)



SPECIFICATIONS *(The specifications shown pertain specifically to the model HR-S3900U/S3910U/S5900U/S5910U)*

GENERAL

Power requirement : AC 120 V∿ , 60 Hz
Power consumption
Power on : 20 W
Power off : 2.5 W
Temperature
Operating : 5°C to 40°C (41°F to 104°F)
Storage : –20°C to 60°C (–4°F to140°F)
Operating position : Horizontal only
Dimensions (W x H x D) : 400 x 94 x 283 mm
Weight : 3.3 kg
Format : S-VHS/VHS NTSC standard
Maximum recording time
SP : 210 min. with ST-210 video cassette
EP : 630 min. with ST-210 video cassette

VIDEO/AUDIO

Signal system : NTSC-type color signal and EIA monochrome signal, 525 lines/60 fields
Recording/Playback system : DA-4 (Double Azimuth) head helical scan system
Signal-to-noise ratio : 45 dB
Horizontal resolution
VHS : 230 lines
S-VHS : 400 lines
Frequency range
Normal audio : 70 Hz to 10,000 Hz
Hi-Fi audio : 20 Hz to 20,000 Hz
Input/Output : RCA connectors (IN x 2, OUT x 1)
S-video connectors
For HR-S5900U/5910U: (IN x 2, OUT x 1)
For HR-S3900U/3910U: (IN x 1, OUT x 1)

TUNER

Tuning system : Frequency-synthesized tuner
Channel coverage
VHF : Channels 2–13
UHF : Channels 14–69
CATV : 113 Channels
RF output : Channel 3 or 4 (switchable; preset to Channel 3 when shipped) 75 ohms, unbalanced

TIMER

Clock reference : Quartz
Program capacity : 1-year programmable timer/ 8 programs
Memory backup for timer is not supported.

ACCESSORIES

Provided accessories : Infrared remote control unit, “AA” battery x 2, S-video cable (4-pin), RF cable (F-type)

Specifications shown are for SP mode unless specified otherwise.
E. & O.E. Design and specifications subject to change without notice.

Printed in Japan

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No. 82848
March 2001

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The following table lists the differing points between Models (HR-S3900U/U(C), HR-S5900U and HR-S5900U(C)) in this series.

	HR-S3900U/U(C)	HR-S5900U	HR-S5900U(C)
FLYING ERASE HEAD	NOT USED	USED	USED
INSERT/OPERATION	NOT USED	USED	USED
AUDIO DUBBING/OPERATION	NOT USED	USED	USED
REC RESUME	NOT USED	NOT USED	USED
FRONT SOVIDEO INPUT TERMINAL	NOT USED	USED	USED

Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

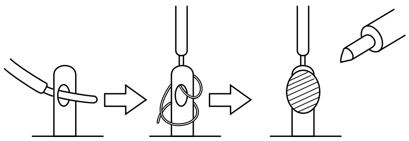


Fig.1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10-15 kg of force in any direction will not loosen it.

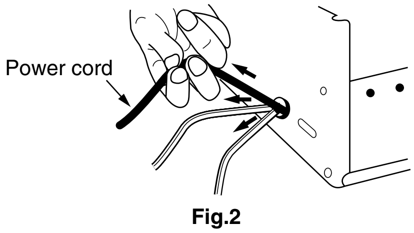


Fig.2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission.
    Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits.
    Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

    1) Connector part number : E03830-001
    2) Required tool : Connector crimping tool of the proper type which will not damage insulated parts.
    3) Replacement procedure
    (1) Remove the old connector by cutting the wires at a point close to the connector.
    Important : Do not reuse a connector (discard it).

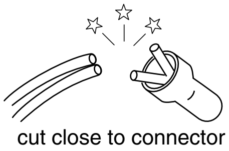


Fig.3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

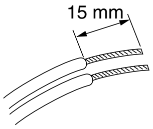


Fig.4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

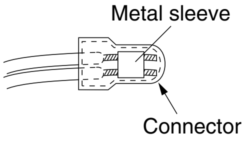


Fig.5

(4) As shown in Fig.6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

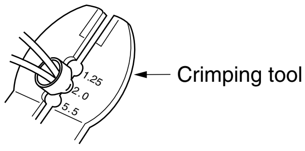


Fig.6

(5) Check the four points noted in Fig.7.

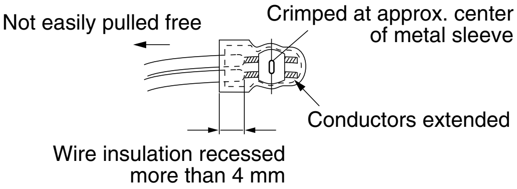

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig.7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

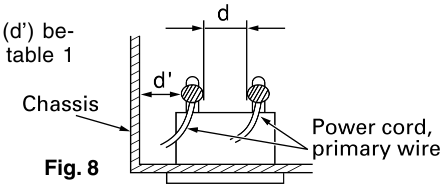


Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   Measuring Method : (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

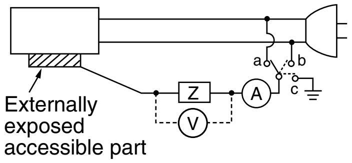


Fig. 9

5. **Grounding (Class 1 model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   Measuring Method:
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

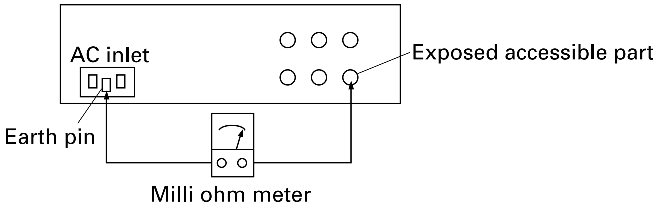


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 miute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	1 MΩ ≦ R ≦ 12 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ/500 V DC	AC 3 kV 1 minute (Class Ⅱ) AC 1.5 kV 1 minute (Class Ⅰ)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

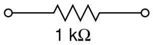
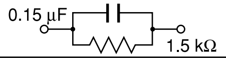
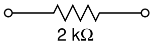
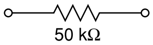
AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	 1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	 0.15 µF 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	 2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		 50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

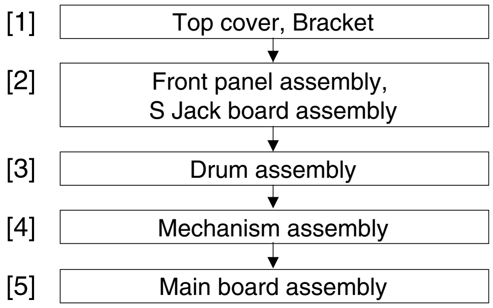
Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

SECTION 1
DISASSEMBLY

1.1 Disassembly flow chart

This flowchart lists the disassembling steps for the cabinet parts and P.C. boards in order to gain access to item(s) to be serviced. When reassembling, perform the step(s) in reverse order. Bend, route and dress the flat cables as they were originally laid.



1.2 How to read the disassembly and assembly

<Example>

Step/ Loc No.	Part Name	Fig. No.	Point	Note
[1]	Top cover, Bracket	D1	4(S1a),(S1b),3(L1a), 2(SD1a),(P1a),(W1a), CN1(WR1a), 2(S1c)	<Note 1a>
(1)	(2)	(3)	(4)	(5)

(1) Order of steps in Procedure
When reassembling, perform the step(s) in the reverse order. These numbers are also used as the identification (location) No. of parts Figures.

(2) Part name to be removed or installed.

(3) Fig. No. showing procedure or part location.

(4) Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped or unsoldered.
P= Spring, W= Washer, S= Screw, L= Locking tab, SD= Solder, CN**(WR**)= Remove the wire (WR**) from the connector (CN**).

Note:

- ***The bracketed ( ) WR of the connector symbol are assigned nos. in priority order and do not correspond to those on the spare parts list.***

(5) Adjustment information for installation

1.3 Disassembly/assembly method

Step/ Loc No.	Part Name	Fig. No.	Point	Note
[1]	Top cover, Bracket	D1	3(S1a) 2(S1b)	
[2]	Front panel assembly S Jack board assembly	D2	CN7001(WR2a) 7(L2a) CN7108(WR2b), 2(S2a)	<Note 2a> <Note 2b> <Note 2c>
[3]	Drum assembly	D3	CON1(WR3a), CN1(WR3b), (S3a), (W3a), Spacer, (S3b), (S3c)	<Note 2c>
[4]	Mechanism assembly	D4	CN2001(WR4a), (S4a), (S4b), (S4c), (S4d)	<Note 2c> <Note 4a>
[5]	Main board assembly	D5	(S5a), 7(L5a)	

<Note 2a>

- When reattaching the Front panel assembly, make sure that the door opener “a” of the Cassette holder assembly is lowered in position prior to the reinstallation.

<Note 2b>

- When reattaching the Front panel assembly, pay careful attention to the switch lever not to make it touch the switch knob “b” of the Main board assembly from the side.

<Note 2c>

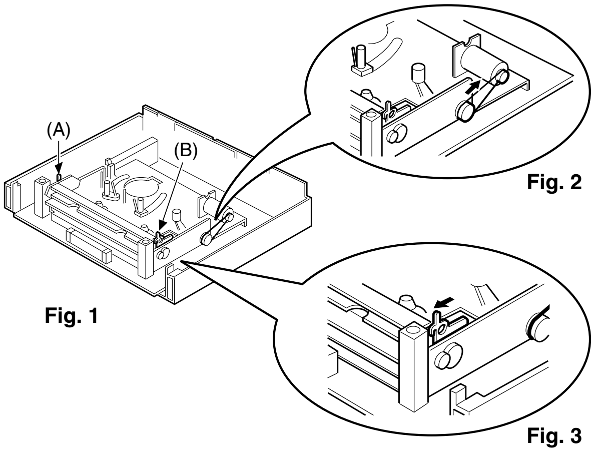
- Be careful not to damage the connector and wire etc. during connection and disconnection.
  When connecting the wire to the connector, be careful with the wire direction.

<Note 4a>

- When it is required to remove the screws (S4a to S4b) retaining the Mechanism assembly, please refer to the “Procedures for Lowering the Cassette holder assembly”(See on page 1-2).
- When reattaching the Mechanism assembly to the Main board assembly, take care not to damage the sensors and switch on the Main board assembly.

Procedures for Lowering the Cassette holder assembly

As the mechanism of this unit is integrated with the Housing assembly, the holder must be lowered and the two screws unscrewed when removing the Mechanism assembly.



Turn the loading motor pulley in the direction as indicated by Fig.2. As both (A) and (B) levers are lodged twice, push the levers in the direction as indicated by Fig.3 to release them. When pushing the levers, do it in the order of (A), (B), (B), (A). When the holder has been lowered, turn the pulley until the cassette holder is securely in place without allowing any up/down movement.

Procedures for Lowering the Cassette holder assembly

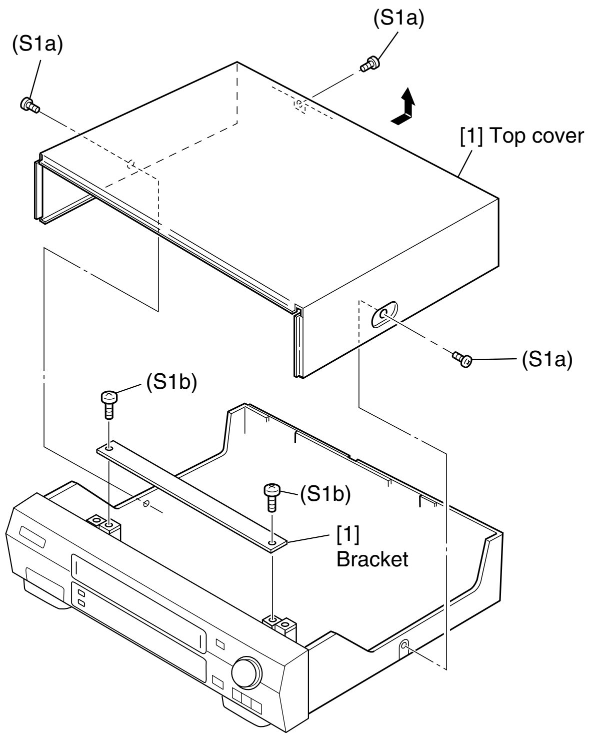


Fig. D1

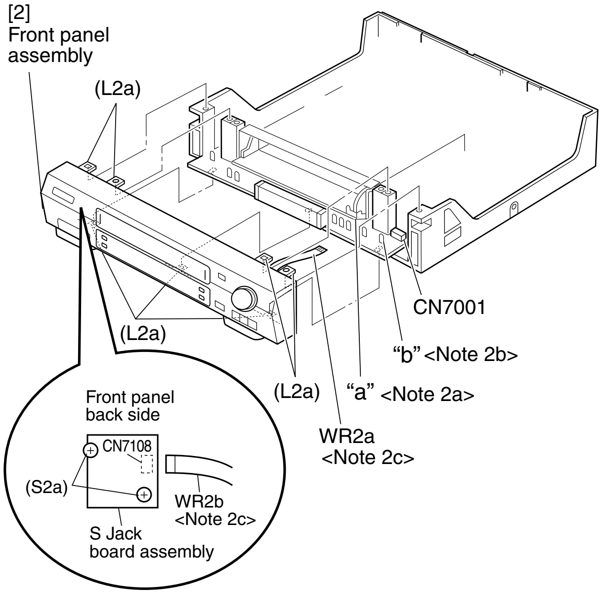


Fig. D2

Note:
When installing the Drum assembly, secure the screws (S3a to S3c) in the order of a, b, c.

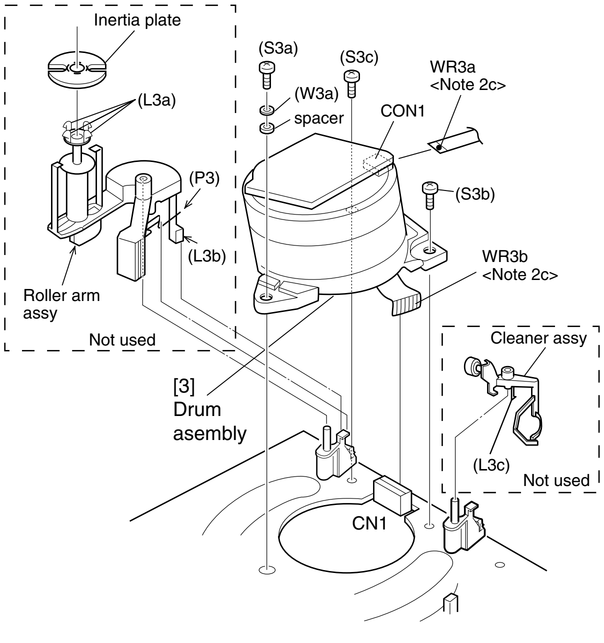


Fig. D3

Note:
When installing the Mechanism assembly, secure the screws (S4a to S4b) in the order of a, b.

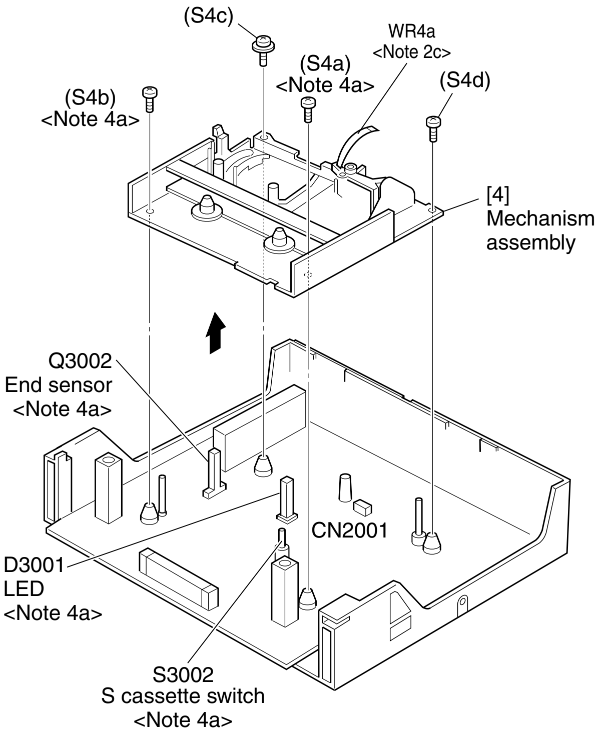


Fig. D4

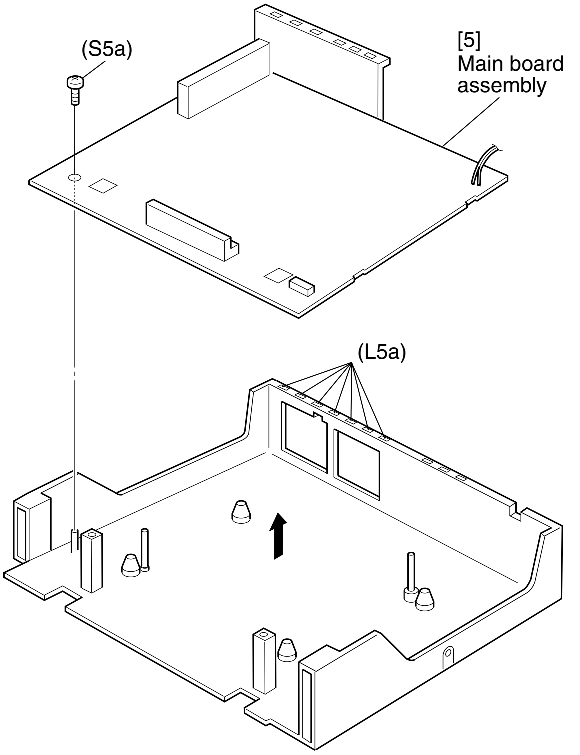


Fig. D5

1.4 Service position

This unit has been designed so that the Mechanism and Main board assemblies can be removed together from the chassis assembly. Before diagnosing or servicing the circuit boards, take out the major parts from the chassis assembly.

1.4.1 How to set the "Service position"

(1) Refer to the disassembly procedure and perform the disassembly of the major parts before removing the Drum assembly.
(2) Lower the cassette holder to prepare for the removal of the Mechanism assembly screws. (Refer to the "Procedures for lowering the Cassette holder assembly" of 1.3 Disassembly/assembly method.)
(3) Remove the combined Mechanism and Main board assemblies.
(4) Connect the wires and connectors of the major parts that have been removed in step (1). (Refer to Fig.1-4-1a.)
(5) Place the combined Mechanism and Main board assemblies upside down.
(6) Insert the power cord plug into the power outlet and then proceed with the diagnostics and servicing of the board assembly.

Notes:

- ***Before inserting the power cord plug into the power outlet, make sure that none of the electrical parts are able to short-circuit between the workbench and the board assembly.***
- ***For the disassembly procedure of the major parts and details of the precautions to be taken, see "1.3 Disassembly/assembly method".***
- ***If there are wire connections from the Main board and Mechanism assemblies to the other major parts, be sure to remove them (including wires connected to the major parts) first before performing step (2).***
- ***When carrying out diagnosis and repair of the Main board assembly in the "Service position", be sure to ground both the Main board and Mechanism assemblies. If they are improperly grounded, there may be noise on the playback picture or FDP counter display may move even when the mechanism is kept in an inoperative status.***
- ***In order to diagnose the playback or recording of the cassette tape, set the Mechanism assembly to the required mode before placing it upside down. If the mechanism mode is changed (including ejection) while it is in an upside down position the tape inside may be damaged.***
- ***The mechanism and board assemblies of this unit are attached by connectors only.***
  When carrying out a diagnosis or repair of the boards in the "Service position", make sure that the connectors are not disconnected.

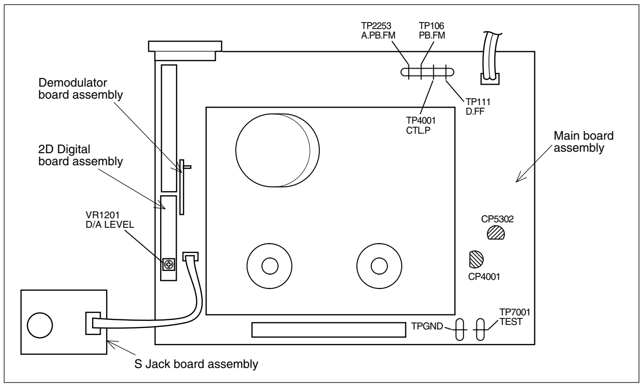


Fig. 1-4-1a

1.5 Mechanism service mode

This model has a unique function to enter the mechanism into every operation mode without loading of any cassette tape. This function is called the "Mechanism service mode".

1.5.1 How to set the "Mechanism service mode"

(1) Unplug the power cord plug from the power outlet.
(2) Connect TPGND and TP7001(TEST) on the Main board assembly with a jump wire.
(3) Insert the power cord plug into the power outlet.
(4) With lock levers (A) (B) on the left and right of the Cassette holder assembly pulled toward the front, slide the holder in the same direction as the cassette insertion direction. (For the positions of lock levers (A) (B), refer to the "Procedures for lowering the Cassette holder assembly" of 1.3 Disassembly/assembly method.)
(5) The cassette holder lowers and, when the loading has completed, the mechanism enters the desired mode.

1.6 Jig RCU mode

This unit uses the following two modes for receiving remote control codes.

1) User RCU mode : Ordinary mode for use by the user.
2) Jig RCU mode : Mode for use in production and servicing.

When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received). As both of the above two modes are stored in the EEPROM, it is required to set the VCR back to the User RCU mode each time that an adjustment is made or to check that the necessary operations have been completed. These modes can be set by the operations described below.

1.6.1 Setting the Jig RCU mode

(1) Unplug the power cord plug from the power outlet.
(2) Press and hold the "REC" and "PAUSE" buttons on the VCR simultaneously, while plugging the power cord plug into the power outlet.
When the VCR is set to the Jig RCU mode, the symbols (" : ") in the time display of the FDP are turned off.

1.6.2 Setting the User RCU mode

(1) Turn off the power.
(2) Press the "REC" and "PAUSE" buttons of the VCR simultaneously. Alternatively, transmit the code "80" from the Jig RCU.

1.7 Emergency display function

This unit has a function for storing the history of the past two emergencies (EMG) and displaying them on each FDP (or OSD). With the status of the VCR and mechanism at the moment an emergency occurred can also be confirmed.

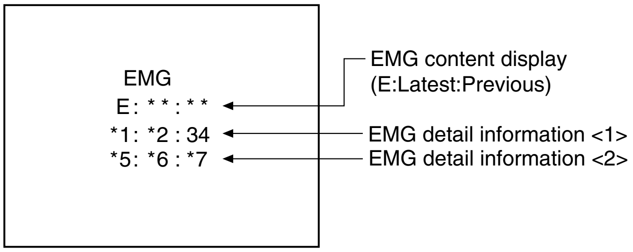
FDP display model
[FDP display]

0 : 00 : 00	Normal display
E: * * : * *	EMG content display (E:Latest:Previous)
*1: *2 : 34	EMG detail information <1>
*5: *6 : *7	EMG detail information <2>

FDP (7segment LED) display model
[FDP display]

0: 00	Normal display
E: **	EMG content display (Latest)
1: **	EMG content display (Previous)
2: *1	EMG detail information <1> [Deck operation mode]
3: *2	EMG detail information <1> [Mechanism operation mode]
4: 34	EMG detail information <1> [Mechanism sensor information and Mechanism mode position]
5: *5	EMG detail information <2> [Type of the cassette tape in use <1>]
6: *6	EMG detail information <2> [Winding position of the cassette tape in use]
7: *7	EMG detail information <2> [Type of the cassette tape in use <2> (Winding area)]

OSD display model
[OSD display]



Notes:

- ***The EMG detail information <1><2> show the information on the latest EMG.***
  It becomes " – – : – – : – –" when there is no latest EMG record.
- ***When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received).***

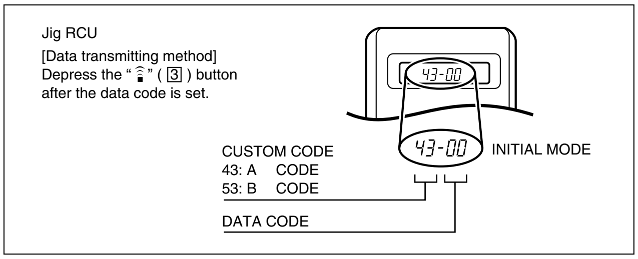
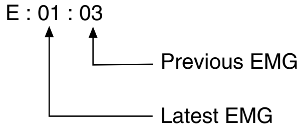

Jig RCU
[Data transmitting method]
Depress the " " (3) button
after the data code is set.
43-00
43-00
INITIAL MODE
CUSTOM CODE
43: A CODE
53: B CODE
DATA CODE

Fig. 1-7a Jig RCU [PTU94023B]

1.7.1 Displaying the EMG information

(1) Transmit the code "59" from the Jig RCU.
The FDP shows the EMG content in the form of "E: * * : * * ".

<Example 1>



<Example 2> E : – – : – – ← No EMG record

(2) Transmit the code "59" from the Jig RCU again.
The FDP shows the EMG detail information <1> in the form of " * 1 : * 2 : 34 ".

- *1 : Deck operation mode at the moment of EMG
- *2 : Mechanism operation mode at the moment of EMG
- 3– : Mechanism sensor information at the moment of EMG
- –4 : Mechanism mode position at the moment of EMG

(3) Transmit the code "59" from the Jig RCU once again.
The FDP shows the EMG detail information <2> in the form of " * 5 : * 6 : * 7 ".

- *5 : Type of the cassette tape in use <1> .
- *6 : Winding position of the cassette tape in use
- *7 : Type of the cassette tape in use <2> (Winding area)

(4) Transmit the code "59" from the Jig RCU once again to reset the display.

Notes:

- ***For the OSD display model, all EMG information are showed by transmitting first code from the Jig RCU.***
- ***For the EMG content, see "1.7.3 EMG content description".***
- ***For the EMG detail information <1> , see "1.7.4 EMG detail information <1> ".***
- ***For the EMG detail information <2> , see "1.7.5 EMG detail information <2>".***

1.7.2 Clearing the EMG history

(1) Display the EMG history.
(2) Transmit the code "36" from the Jig RCU.
(3) Reset the EMG display.

(EMG-02e)

1.7.3 EMG content description

Note: ***EMG contents "E08/E09" are for the model with Dynamic Drum (DD).***

FDP	CONTENT	CAUSE
E01: Loading EMG	When the mechanism mode cannot be changed to another mode even when the loading motor has rotated for more than 4 seconds in the loading direction, [E:01] is identified and the power is turned off.	1. The mechanism is locked in the middle of mode transition. 2. The mechanism is locked at the loading end due to the encoder position reading error during mode transition. 3. Power is not supplied to the loading MDA.
E02: Unloading EMG	When the mechanism mode cannot be changed to another mode even when the loading motor has rotated for more than 4 seconds in the unloading direction, [E:02] is identified and the power is turned off.	1. The mechanism is locked in the middle of mode transition. 2. The mechanism is locked at the unloading end due to the encoder position reading error during mode transition. 3. Power is not supplied to the loading MDA.
E03: Take Up Reel Pulse EMG	When the take-up reel pulse has not been generated for more than 4 seconds in the capstan rotating mode, [E:03] is identified, the pinch rollers are turned off and stopped, and the power is turned off. However, the reel EMG is not detected in STILL/SLOW modes.	1. The take-up reel pulse is not generated in the FWD transport modes (PLAY/FWD SEARCH/FF, etc.) because; 1) The idler gear is not meshed with the take-up reel gear; 2) The idler gear is meshed with the take-up reel gear, but incapable of winding due to too large mechanical load (abnormal tension); 3) The take-up reel sensor does not output the FG pulse. 2. The supply reel pulse is not generated in the REV transport modes (REV SEARCH/REW, etc.) because; 1) The idler gear is not meshed with the supply reel gear. 2) The idler gear is meshed with the supply reel gear, but incapable of winding due to too large a mechanical load (abnormal tension); 3) The supply reel sensor does not output the FG pulse. 3. Power is not supplied to the reel sensors.
E04: Drum FG EMG	When the drum FG pulse has not been input for more than 3 seconds in the drum rotating mode, [E:04] is identified, the pinch rollers are turned off and stopped, and the power is turned off.	1. The drum could not start or the drum rotation has stopped due to too large a load on the tape, because; 1) The tape tension is abnormally high; 2) The tape is damaged or a foreign object (grease, etc.) adheres to the tape. 2. The drum FG pulse did not reach the System controller CPU because; 1) The signal circuit is disconnected in the middle; 2) The FG pulse generator (hall device) of the drum is faulty. 3. The drum control voltage (DRUM CTL V) is not supplied to the MDA. 4. Power is not supplied to the drum MDA.
E05: Cassette Eject EMG	When the eject operation does not complete in 3 seconds after the start, [E:05] is identified, the pinch rollers are turned off and stopped, and the power is turned off. When the cassette insertion operation does not complete in 3 seconds after the start, the cassette is ejected. In addition, when the operation does not complete within 3 seconds after the start, [E:05] is also identified and the power is turned off immediately.	1. The cassette cannot be ejected due to a failure in the drive mechanism of the housing. 2. When the housing load increases during ejection, the loading motor is stopped because of lack of headroom in its drive torque. Housing load increasing factors: Temperature environment (low temperature, etc.), mechanism wear or failure. 3. The sensor/switch for detecting the end of ejection are not functioning normally. 4. The loading motor drive voltage is lower than specified or power is not supplied to the motor (MDA). 5. When the user attempted to eject a cassette, a foreign object (or perhaps the user's hand) was caught in the opening of the housing.
E06: Capstan FG EMG	When the capstan FG pulse has not been generated for more than 1 second in the capstan rotating mode, [E:06] is identified, the pinch rollers are turned off and stopped, and the power is turned off.However, the capstan EMG is not detected in STILL/SLOW/FF/REW modes.	1. The capstan could not start or the capstan rotation has stopped due to too large a load on the tape, because; 1) The tape tension is abnormally high (mechanical lock); 2) The tape is damaged or a foreign object (grease, etc.) is adhered to the tape (occurrence of tape entangling, etc.). 2. The capstan FG pulse did not reach the System controller CPU because; 1) The signal circuit is disconnected in the middle; 2) The FG pulse generator (MR device) of the capstans is faulty. 3. The capstan control voltage (CAPSTAN CTL V) is not supplied to the MDA. 4. Power is not supplied to the capstan MDA.
E07: SW Power Short-Circuit EMG	When short-circuiting of the SW power supply with GND has lasted for 0.5 second or more, [E:07] is identified, all the motors are stopped and the power is turned off.	1. The SW 5 V power supply circuit is shorted with GND. 2. The SW 12 V power supply circuit is shorted with GND.
E08: DD Initialized (Absolute Position Sensor) EMG	When DD tilting does not complete in 4 seconds, [E:08] is identified, the tilt motor is stopped and the power is turned off.	1. The absolute value sensor is defective. (The soldered parts have separated.) 2. The pull-up resistor at the absolute sensor output is defective. (The soldered parts have separated.) 3. Contact failure or soldering failure of the pins of the connector (board-to-board) to the absolute value sensor. 4. The absolute value sensor data is not sent to the System Controller CPU.
E09: DD FG EMG	When the DD FG pulse is not generated within 2.5 seconds, [E:09] is identified, the tilt motor is stopped and the power is turned off.	1. The FG sensor is defective. (The soldered parts have separated.) 2. The pull-up resistor at the FG sensor output is defective. (The soldered parts have separated.) 3. Contact failure or soldering failure of the pins of the connector (board-to-board) to the FG sensor. 4. The power to the sensor is not supplied. (Connection failure/soldering failure) 5. The FG pulse is not sent to the System Controller CPU. 6. The tilt motor is defective. (The soldered parts have separated.) 7. The drive power to the tilt motor is not supplied. (Connection failure/soldering failure) 8. The tilt motor drive MDA - IC is defective. 9. Auto-recovery of the DD tilting cannot take place due to overrun.
E0A: Supply Reel Pulse EMG	When the supply reel pulse has not been generated for more than 10 seconds in the capstan rotating mode, [E:0A] is identified and the cassette is ejected (but the power is not turned off). However, note that the reel EMG is not detected in the SLOW/STILL mode.	1. The supply reel pulse is not generated in the FWD transport mode (PLAY/FWD SEARCH/FF, etc.) because; 1) PLAY/FWD or SEARCH/FF is started while the tape in the inserted cassette is cut in the middle; 2) A mechanical factor caused tape slack inside and outside the supply reel side of the cassette shell. In this case, the supply reel will not rotate until the tape slack is removed by the FWD transport, so the pulse is not generated until then; 3) The FG pulse output from the supply reel sensor is absent. 2. The take-up reel pulse is not generated in the REV transport mode (REV SEARCH/REW, etc.). 1) REV SEARCH/REW is started when the tape in the inserted cassette has been cut in the middle; 2) A mechanical factor caused tape slack inside and outside the take-up reel side of the cassette shell. In this case, the supply reel will not rotate until the tape slack is removed by the REV transport, so the pulse will not be generated until that time; 3) The FG pulse output from the take-up reel sensor is absent. 3. The power to a reel sensor is not supplied.
EC1 or EU1: Head clog warning	Presupposing the presence of the control pulse output in the PLAY mode, when the value obtained by mixing the two V.FM output channels (without regard to the A.FM output) has remained below a certain threshold level for more than 10 seconds, [E:C1] or [E:U1] is identified and recorded in the emergency history. During the period in which a head clog is detected, the FDP and OSD repeat the "3-second warning display" and "7-second noise picture display" alternately. EMG code : "E:C1" or "E:U1" / FDP : "U:01" / OSD : "Try cleaning tape." or "Use cleaning cassette." The head clog warning is reset when the above-mentioned threshold has been exceeded for more than 2 seconds or the mode is changed to another mode than PLAY.	

Table 1-7-3a

1.7.4 EMG detail information <1>

The status (electrical operation mode) of the VCR and the status (mechanism operation mode/sensor information) of the mechanism in the latest EMG can be confirmed based on the figure in EMG detail information <1> .

[FDP/OSD display]

*1 : *2 : 34

*1 : Deck operation mode at the moment of EMG
*2 : Mechanism operation mode at the moment of EMG
3– : Mechanism sensor information at the moment of EMG
–4 : Mechanism mode position at the moment of EMG

Note:

- ***For EMG detailed information <1>, the content of the code that is shown on the FDP (or OSD) differs depending on the parts number of the system control microprocessor (IC3001) of the VCR. The system control microprocessor parts number starts with two letters, refer these to the corresponding table.***

*1 : Deck operation mode
[Common table of MN*, HD* and M3*]

Display		Deck operation mode
MN*/M3*	HD*	
00	-	Mechanism being initialized
01	00	STOP with pinch roller pressure off (or tape present with P.OFF)
02	01	STOP with pinch roller pressure on
03	-	POWER OFF as a result of EMG
04	04	PLAY
0C	0E	REC
10	11	Cassette ejected
20	22	FF
21	-	Tape fully loaded, START sensor ON, short FF
22	-	Cassette identification FWD SEARCH before transition to FF (SP x7-speed)
24	26	FWD SEARCH (variable speed) including x2-speed
2C	2E	INSERT REC
40	43	REW
42	-	Cassette identification REV SEARCH before transition to REW (SP x7-speed)
44	47	REV SEARCH (variable speed)
4C	4C	AUDIO DUB
6C	6E	INSERT REC (VIDEO + AUDIO)
84	84	FWD STILL / SLOW
85	85	REV STILL / SLOW
8C	8F	REC PAUSE
8D	-	Back spacing
8E	-	Forward spacing (FWD transport mode with BEST function)
AC	AF	INSERT REC PAUSE
AD	-	INSERT REC back spacing
CC	CD	AUDIO DUB PAUSE
CD	-	AUDIO DUB back spacing
EC	EF	INSERT REC (VIDEO + AUDIO) PAUSE
ED	-	INSERT REC (VIDEO + AUDIO) back spacing

*2 : Mechanism operation mode
[Common table of MN* and M3*]

Display		Mechanism operation mode
MN*	M3*	
00	00	Command standby (Status without executing command)
02	02	POWER OFF by EMG occurrence
04	04	Moving to the adjacent position in the LOAD direction
06	06	Moving to the adjacent position in the UNLOAD direction
08	08	Cassette ejection being executed / Cassette housing ejection being executed
-	0A	Mode transition to STOP with cassette ejection end
0A	0C	Cassette insertion being executed
0C	0E	Tape being loaded
0E	10	Tape being unloaded
10	12	Mode transition to STOP with pinch roller compression ON
12	14	Mode transition to STOP with pinch roller compression OFF
14	16	Mode transition to STOP with pinch roller compression OFF as a result of POWER OFF
16	18	Mode transition to STOP with pinch roller compression ON as a result of POWER ON
18	1A	Mode transition to PLAY
1A	1C	Mode transition to FWD SEARCH
1C	1E	Mode transition to REC
1E	20	Mode transition to FWD STILL / SLOW
20	22	Mode transition to REV STILL / SLOW
22	24	Mode transition to REV SEARCH
24	26	Mode transition from FF / REW to STOP
26	28	Mode transition to FF
28	2A	Mode transition to REW
2A	2C	4 sec. of REV as a result of END sensor going ON during loading
2C	2E	Short FF / REV as a result of END sensor going ON during unloading
2E	30	Mechanism position being corrected due to overrun
80	80	Mechanism in initial position (Dummy command)

[Table of HD*]

Display	Mechanism operation mode
00	STOP with pinch roller pressure off
01	STOP with pinch roller pressure on
02	U/L STOP (or tape being loaded)
04	PLAY
05	PLAY (x1-speed playback using JOG)
0E	REC
11	Cassette ejected
22	FF
26	FWD SEARCH (variable speed) including x2-speed
2E	INSERT REC
43	REW
47	REV SEARCH
4C	AUDIO DUB
6E	INSERT REC (VIDEO + AUDIO)
84	FWD STILL/SLOW
85	REV STILL/SLOW
8F	REC PAUSE
AF	INSERT REC PAUSE
C7	REV SEARCH (x1-speed reverse playback using JOG)
CD	AUDIO DUB PAUSE
EF	INSERT REC (VIDEO + AUDIO) PAUSE
F0	Mechanism being initialized
F1	POWER OFF as a result of EMG
F2	Cassette being inserted
F3	Cassette being ejected
F4	Transition from STOP with pinch roller pressure on to STOP with pinch roller pressure off
F5	Transition from STOP with pinch roller pressure on to PLAY
F6	Transition from STOP with pinch roller pressure on to REC
F7	Cassette type detection SEARCH before FF/REW is being executed
F8	Tape being unloaded
F9	Transition from STOP with pinch roller pressure off to STOP with pinch roller pressure on
FA	Transition from STOP with pinch roller pressure off to FF/REW
FB	Transition from STOP with pinch roller pressure off to REC.P (T.REC,etc.)
FC	Transition from STOP with pinch roller pressure off to cassette type detection SEARCH
FD	Short REV being executed after END sensor on during unloading
FE	Tension loosening being executed after tape loading (STOP with pinch roller pressure on)

3– : Mechanism sensor information
[Common table of MN*, HD* and M3*]

Display	Mechanism sensor information				
	MN* / HD* S-VHS SW	M3* CASS SW	REC safety SW	Start sensor	End sensor
0-	VHS	Cassette insertion	Tab broken	ON	ON
1-	VHS	Cassette insertion	Tab broken	ON	OFF
2-	VHS	Cassette insertion	Tab broken	OFF	ON
3-	VHS	Cassette insertion	Tab broken	OFF	OFF
4-	VHS	Cassette insertion	Tab present	ON	ON
5-	VHS	Cassette insertion	Tab present	ON	OFF
6-	VHS	Cassette insertion	Tab present	OFF	ON
7-	VHS	Cassette insertion	Tab present	OFF	OFF
8-	S-VHS	Cassette ejection	Tab broken	ON	ON
9-	S-VHS	Cassette ejection	Tab broken	ON	OFF
A-	S-VHS	Cassette ejection	Tab broken	OFF	ON
B-	S-VHS	Cassette ejection	Tab broken	OFF	OFF
C-	S-VHS	Cassette ejection	Tab present	ON	ON
D-	S-VHS	Cassette ejection	Tab present	ON	OFF
E-	S-VHS	Cassette ejection	Tab present	OFF	ON
F-	S-VHS	Cassette ejection	Tab present	OFF	OFF

–4 : Mechanism mode position
[Common table of MN*, HD* and M3*]

Display			Mechanism mode position
MN*	HD*	M3*	
-0	-7	-	Initial value
-1	-0	-	EJECT position
-	-	-0	EJECT position (Cassette housing drive mode)
-2	-7	-	Housing operating
-	-	-1	Between EJECT and U / L STOP
-3	-1	-2	U / L STOP position
-	-	-3	Guide arm drive position
-4	-7	-4	Tape being loaded / unloaded (When the pole base is located on the front side of the position just beside the drum)
-5	-2	-5	Tape being loaded / unloaded (When the pole base is located on the rear side of the position just beside the drum)
-6	-7	-6	Pole base compressed position
-7	-3	-F	FF / REW position
-8	-7	-F	Between FF / REW and STOP with pinch roller compression ON
-9	-4	-F	STOP with pinch roller compression OFF
-A	-7	-E	Between STOP with pinch roller compression OFF and REV
-B	-5	-	REV (REV STILL / SLOW) position
-	-	-D	REV position
-	-	-C	Between REV and REV STILL / SLOW
-	-	-B	REV STILL / SLOW position
-C	-7	-	Between REV and FWD
-	-	-A	Between REV STILL / SLOW and FWD STILL / SLOW
-D	-6	-	FWD (FWD STILL / SLOW) position
-	-	-9	FWD STILL / SLOW position
-E	-7	-	Between FWD and PLAY
-	-	-8	Between FWD STILL / SLOW and PLAY
-F	-6	-7	PLAY position

Note:

- ***In the case of the "HD*” microprocessor, as the display is always "-7” at any intermediate position between modes, the position of transitory EMG may sometimes not be located.***

1.7.5 EMG detail information <2>

The type of the cassette tape and the cassette tape winding position can be confirmed based on the figure in EMG detail information <2> .

[FDP/OSD display]

*5 : *6 : *7

*5 : Type of the cassette tape in use <1>
*6 : Winding position of the cassette tape in use
*7 : Type of the cassette tape in use <2> (Winding area)

Note:

- ***EMG detail information <2> is the reference information stored using the remaining tape detection function of the cassette tape. As a result, it may not identify cassette correctly when a special cassette tape is used or when the tape has variable thickness.***

*5 : Cassette tape type <1>

Display	Cassette tape type <1>
00	Cassette type not identified
16	Large reel/small reel (T-0 to T-15/T-130 to T-210) not classified
82	Small reel, thick tape (T-120) identified/thin tape (T-140) identified
84	Large reel (T-0 to T-60) identified
92	Small reel, thick tape (T-130) identified/thin tape (T-160 to T-210) identified
93	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) not classified
C3	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) being classified
D3	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) being classified
E1	C cassette, thick tape (TC-10 to TC-20) identified
E2	Small reel, thick tape (T-0 to T-100) identified
E9	C cassette, thin tape (TC-30 to TC-40) identified
F1	C cassette, thick tape/thin tape (TC-10 to TC-40) not classified

Notes:

- ***Cassette tape type <1> is identified a few times during mode transition and the identification count is variable depending on the cassette tape type. If an EMG occurs in the middle of identification, the cassette tape type may not be able to be identified.***
- ***If other value than those listed in the above table is displayed, the cassette tape type is not identified.***

*6 : Cassette tape winding position

The cassette tape winding position at the moment of EMG is displayed by dividing the entire tape (from the beginning to the end) in 22 sections using a hex number from “00” to “15”.

“00” : End of winding
“15” : Beginning of winding
“FF or – –” : Tape position not identified

*7 : Cassette tape type <2> (Winding area)

Display	Cassette tape type <2>	
00	Cassette type not identified	
07	Small reel, thick tape	T-5
08 - 0E	C cassette, thick tape	TC-10
09 - 15	C cassette, thick tape	TC-20P
0A - 0B	Small reel, thick tape	T-20
0A - 16	C cassette, thin tape	TC-30
0A - 16	C cassette, thin tape	TC-40
0D - 0F	Small reel, thick tape	T-40
11 - 14	Small reel, thick tape	T-60
15 - 18	Small reel, thick tape	T-80 / DF-160
17 - 1A	Small reel, thick tape	T-90 / DF-180
19 - 1D	Small reel, thick tape	T-100
1D - 21	Small reel, thick tape	T-120 / DF-240
1E - 1F	Small reel, thin tape	T-140
1F - 23	Small reel, thick tape	T-130
21 - 23	Small reel, thin tape	T-160
21 - 23	Small reel, thin tape	T-168
22 - 24	Small reel, thick tape	DF-300
22 - 24	Small reel, thin tape	T-180 / DF-360
22 - 24	Small reel, thin tape	T-210 / DF-420
22 - 23	Large reel	T-5
23 - 24	Large reel	T-10
25 - 26	Large reel	T-20
27 - 29	Large reel	T-30
29 - 2B	Large reel	T-40
2D - 2F	Large reel	T-60

Note:

- ***The values of cassette tape type <2> in the above table are typical values with representative cassette tapes.***

SECTION 2
MECHANISM ADJUSTMENT

2.1 Before starting repair and adjustment

2.1.1 Precautions

(1) Unplug the power cord plug of the VCR before using your soldering iron.
(2) Take care not to cause any damage to the conductor wires when plugging and unplugging the connectors.
(3) Do not randomly handle the parts without identifying where the trouble is.
(4) Exercise enough care not to damage the lugs, etc. during the repair work.
(5) When reattaching the front panel assembly, make sure that the door opener of the cassette holder assembly is lowered in position prior to the reinstallation. (See SECTION 1 DISASSEMBLY.)
(6) When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received). (See SECTION 1 DISASSEMBLY.)

2.1.2 Checking for proper mechanical operations

Enter the mechanism service mode when you want to operate the mechanism when no cassette is loaded. (See SECTION 1 DISASSEMBLY.)

2.1.3 Manually removing the cassette tape

1. In case of electrical failures

If you cannot remove the cassette tape which is loaded because of any electrical failure, manually remove it by taking the following steps.

(1) Unplug the power cord plug from the power outlet.
(2) Refer to the disassembly procedure and perform the disassembly of the major parts before removing the drum assembly.
(3) Unload the pole base assembly by manually turning the loading motor of the mechanism assembly toward the front. In doing so, hold the tape by the hand to keep the slack away from any grease. (See Fig.2-1-3a.)
(4) Bring the pole base assembly to a pause when it reaches the position where it is hidden behind the cassette tape.
(5) Move the top guide toward the drum while holding down the lug (A) of the bracket retaining the top guide. Likewise hold part (B) down and remove the top guide.
Section (C) of the top guide is then brought under the cassette lid. Then remove the top guide by pressing the whole cassette tape down. (See Fig.2-1-3b.)
(6) Remove the cassette tape by holding both the slackened tape and the cassette lid.
(7) Take up the slack of the tape into the cassette. This completes removal of the cassette tape.

Note:

- ***For the disassembly procedure of the major parts and details of the precautions to be taken, see "SECTION 1 DISASSEMBLY".***

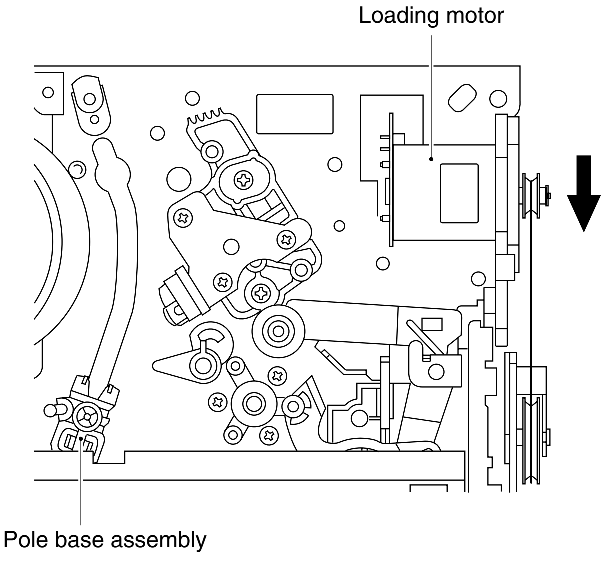


Fig. 2-1-3a

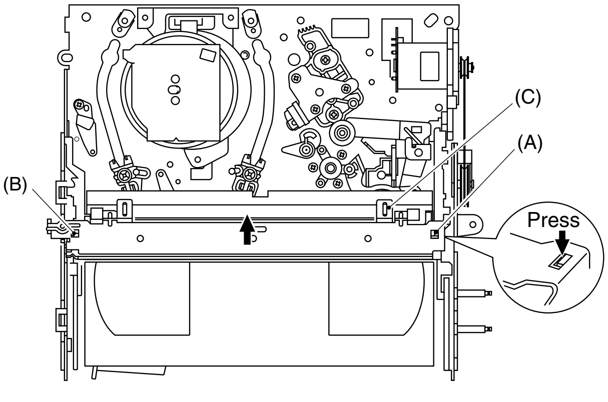


Fig. 2-1-3b

2. In case of mechanical failure

If you cannot remove the cassette tape which is loaded because of any mechanical failure, manually remove it by taking the following steps.

(1) Unplug the power cable and remove the top cover, front panel assembly and others so that the mechanism assembly is visible. (See SECTION 1 DASASSEMBLY.)
(2) While keeping the tension arm assembly of the mechanism assembly free from tension, pull the tape on the pole base assembly (supply or take-up side) out of the guide roller. (See Fig.2-1-3c.)
(3) Take the spring of the pinch roller arm assembly off the hook of the press lever assembly, and detach it from the tape. (See Fig.2-1-3d.)
(4) In the same way as in the electrical failure instructions in 2.1.3-1(5), remove the top guide.
(5) Raise the cassette tape cover. By keeping it in that position, draw out the cassette tape case from the cassette holder and take out the tape.
(6) By hanging the pinch roller arm assembly spring back on the hook, take up the slack of the tape into the cassette.

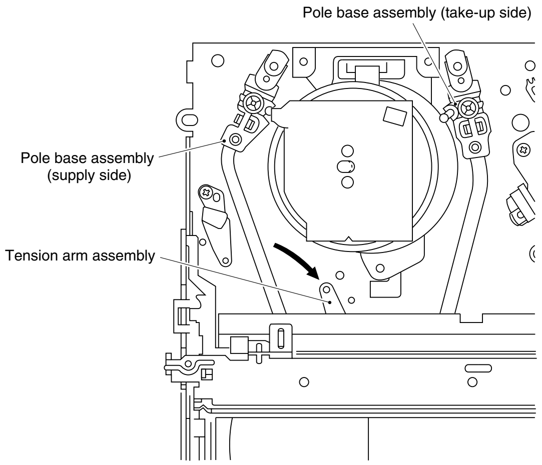

Pole base assembly (take-up side)
Pole base assembly (supply side)
Tension arm assembly

Fig. 2-1-3c

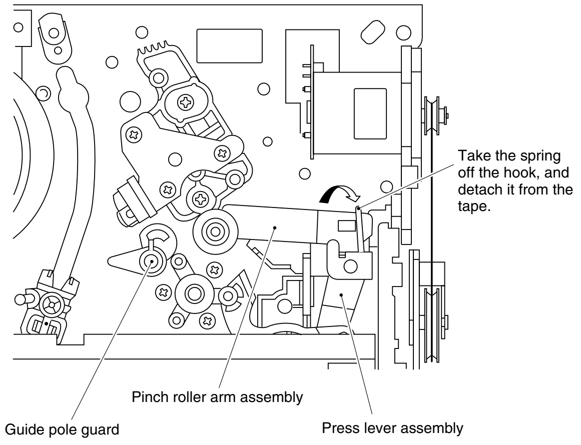
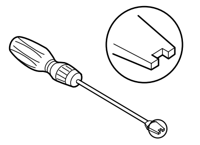
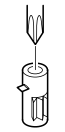
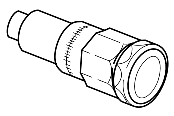
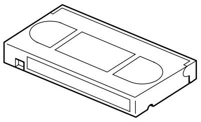
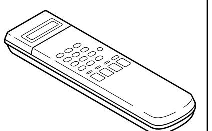
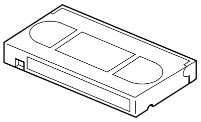
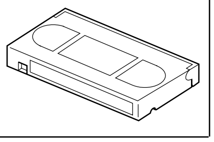

Take the spring off the hook, and detach it from the tape.
Pinch roller arm assembly
Guide pole guard
Press lever assembly

Fig. 2-1-3d

2.1.4 Jigs and tools required for adjustment

Roller driver PTU94002	A/C head positioning tool PTU94010	Torque gauge PUJ48075-2
		
Back tension cassette gauge PUJ48076-2	Jig RCU PTU94023B	
		
Alignment tape (SP, stairstep, NTSC) MHP	Alignment tape (EP, stairstep, NTSC) MHP-L	
		

2.1.5 Maintenance and inspection

1. Location of major mechanical parts

In this chapter, the two mechanism speeds are described by comparing the speeds of the standard type and the high-speed FF/REW type.

It is possible to distinguish between these two types of mechanism by the diameters of their capstan pulleys.

The capstan pulley diameter for the standard type is approx. 32 mm.

The capstan pulley diameter for the high-speed FF/REW type is approx. 43 mm.

For information on the different parts used in the two mechanism types, please refer to the “Replacement of major parts”.

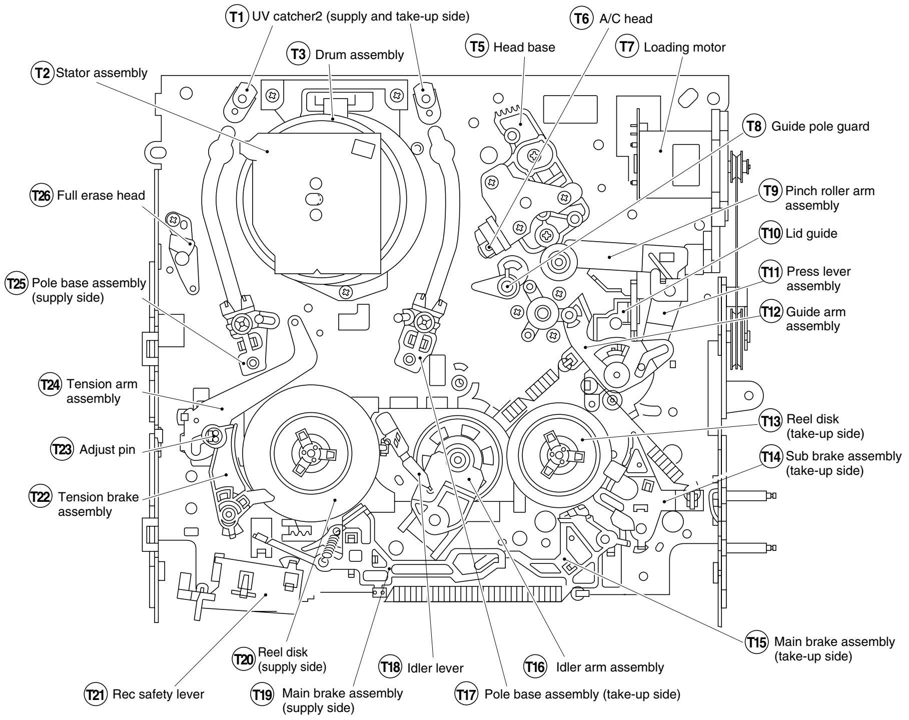

T1 UV catcher2 (supply and take-up side)
T6 A/C head
T3 Drum assembly
T5 Head base
T7 Loading motor
T2 Stator assembly
T8 Guide pole guard
T26 Full erase head
T9 Pinch roller arm assembly
T10 Lid guide
T25 Pole base assembly (supply side)
T11 Press lever assembly
T12 Guide arm assembly
T24 Tension arm assembly
T13 Reel disk (take-up side)
T23 Adjust pin
T14 Sub brake assembly (take-up side)
T22 Tension brake assembly
T15 Main brake assembly (take-up side)
T20 Reel disk (supply side)
T18 Idler lever
T16 Idler arm assembly
T21 Rec safety lever
T19 Main brake assembly (supply side)
T17 Pole base assembly (take-up side)

Fig. 2-1-5a Mechanism assembly top side

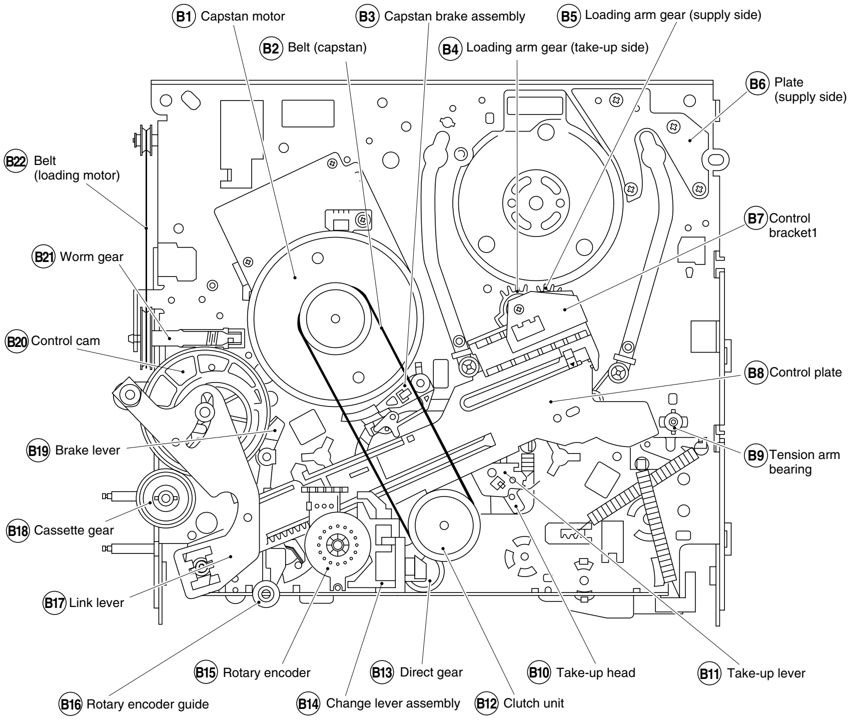


Fig. 2-1-5b Mechanism assembly bottom side

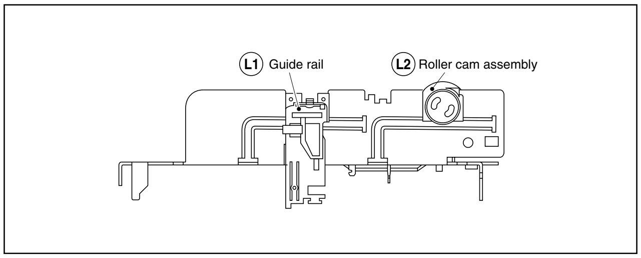


Fig. 2-1-5c Mechanism assembly left side

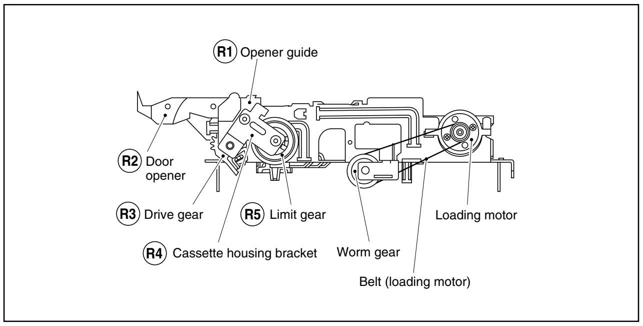


Fig. 2-1-5d Mechanism assembly right side

2. Cleaning

Regular cleaning of the transport system parts is desirable but practically impossible. So make it a rule to carry out cleaning of the tape transport system whenever the machine is serviced.

When the video head, tape guide and/or brush get soiled, the playback picture may appear inferior or at worst disappear, resulting in possible tape damage.

(1) When cleaning the upper drum (especially the video head), soak a piece of closely woven cloth or Kimu-wipe with alcohol and while holding the cloth onto the upper drum by the fingers, turn the upper drum counterclockwise.

Note:

- ***Absolutely avoid sweeping the upper drum vertically as this will cause damage to the video head.***

(2) To clean the parts of the tape transport system other than the upper drum, use a piece of closely woven cloth or a cotton swab soaked with alcohol.

(3) After cleaning, make sure that the cleaned parts are completely dry before using the video tape.

3. Lubrication

With no need for periodical lubrication, you have only to lubricate new parts after replacement. If any oil or grease on contact parts is soiled, wipe it off and newly lubricate the parts.

Note:

- ***See the "mechanism assembly" diagram of the parts list for the lubricating or greasing spots, and for the types of oil or grease to be used.***

4. Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning,lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions.However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary. Also note that rubber parts may deform in time,even if the set is not used.

System	Parts Name	Operation Hours	
		~1000H	~2000H
Tape transport	Upper drum assembly	★○	○
	A/C head	★○	★○
	Lower drum assembly	★	★○
	Pinch roller arm assembly	★	★
	Full erase head	★	★
	Tension arm assembly	★	★
	Capstan motor (Shaft)	★	★
	Guide arm assembly	★	★
Drive	Capstan motor		○
	Capstan brake assembly		○
	Main brake assembly		○
	Belt (Capstan)	○	○
	Belt (Loading motor)		○
	Loading motor		○
	Clutch unit		○
	Worm gear		○
	Control plate		○
Other	Brush	★○	★○
	Tension brake assembly	○	○
	Rotary encoder		○

★ : Cleaning
○ : Inspection or replacement if necessary

Table 2-1-5a

5. Disassembling procedure table

The following table indicates the order in which parts are removed for replacement. To replace parts, remove them in the order of 1 to 18 as shown in the table. To install them, reverse the removal sequence.

The symbols and numbers preceding the individual part names represent the numbers in the "Location of major mechanical parts" table. Also, the "T", "B", and "T/B" on the right of each part name shows that the particular part is removed from the front, from the back, and from both sides of the mechanism, respectively.

	Symbols and numbers			L1	L2	R4	R1	–	–	R3	–	T9	T12	T11	T1	B15	B12	B14	B13	–	B17	B21	B7	B8	B5	B4	B11	T14	T15	T13	T22	T24	T18	B19
Symbols and numbers	Removal parts / (Reference items) Replacement parts	Front (T)/Back (B) of mechanism	Number of removal steps	Guide rail	Roller cam assembly	Cassette housing bracket	Opener guide	Relay gear	Cassette holder assembly	Drive gear	Drive arm	Pinch roller arm assembly	Guide arm assembly	Press lever assembly	UV catcher2	Rotary encoder	Clutch unit	Change lever assembly	Direct gear	Coupling gear	Link lever	Worm gear	Control bracket1	Control plate	Loading arm gear (supply side)	Loading arm gear (take-up side)	Take-up lever	Sub brake assembly (take-up side)	Main brake assembly (take-up side)	Reel disk (take-up side)	Tension brake assembly	Tension arm assembly	Idler lever	Brake lever (∗1)
L1	2.2.3 Guide rail	T	1																															
L2	2.2.3 Roller cam assembly	T	1																															
R4	2.2.3 Cassette housing bracket	T	1																															
R1	2.2.3 Opener guide	T	2			1																												
R2	2.2.3 Door opener	T	3			1	2																											
–	2.2.3 Relay gear	T	3			1	2																											
R5	2.2.3 Limit gear	T	3			1	2																											
–	2.2.3 Cassette holder assembly	T	6	1	2	3	4	5																										
R3	2.2.3 Drive gear	T	4			1	2	3																										
–	2.2.3 Drive arm	T	8	1	2	3	4	5	6	7																								
T9	2.2.4 Pinch roller arm assembly	T	1																															
T12	2.2.5 Guide arm assembly	T	1																															
T11	2.2.5 Press lever assembly	T	3									1	2																					
T6	2.2.6 A/C head	T	1																															
T7	2.2.7 Loading motor	T	1																															
B1	2.2.8 Capstan motor	T/B	1																															
T1	2.2.9 UV catcher2	T	1																															
T17	2.2.9 Pole base assembly (take-up side)	T/B	2												1																			
T25	2.2.9 Pole base assembly (supply side)	T/B	2												1																			
B15	2.2.10 Rotary encoder	B	1																															
B12	2.2.11 Clutch unit	B	1																															
B14	2.2.12 Change lever assembly	B	3													1	2																	
B13	2.2.12 Direct gear	B	4													1	2	3																
–	2.2.12 Coupling gear	B	5													1	2	3	4															
–	2.2.12 Clutch gear	B	6													1	2	3	4	5														
B17	2.2.13 Link lever	B	1																															
B18	2.2.14 Cassette gear	B	2																		1													
B20	2.2.14 Control cam	B	2																		1													
B21	2.2.14 Worm gear	B	1																															
T10	- Lid guide	T/B	5									1	2	3								4												
B7	2.2.15 Control bracket1	B	1																															
B8	2.2.15 Control plate	B	6													1	2	3			4		5											
B5	2.2.16 Loading arm gear (supply side)	B	7													1	2	3			4		5	6										
B4	2.2.16 Loading arm gear (take-up side)	B	8													1	2	3			4		5	6	7									
–	2.2.16 Loading arm gear shaft	B	9													1	2	3			4		5	6	7	8								
B11	2.2.17 Take-up lever	T/B	7													1	2	3			4		5	6										
B10	2.2.17 Take-up head	T/B	8													1	2	3			4		5	6			7							
–	2.2.17 Control plate guide	T/B	8													1	2	3			4		5	6			7							
B3	2.2.18 Capstan brake assembly	T/B	7													1	2	3			4		5	6										
T14	2.2.19 Sub brake assembly(take-up side)	T/B	15	1	2	3	4	5	6	7	8					9	10	11			12		13	14										
T15	2.2.20 Main brake assembly(take-up side)	T/B	16	1	2	3	4	5	6	7	8					9	10	11			12		13	14				15						
T19	2.2.20 Main brake assembly(supply side)	T/B	9	1	2	3	4	5	6	7	8																							
T13	2.2.20 Reel disk (take-up side)	T/B	16	1	2	3	4	5	6	7	8					9	10	11			12		13	14				15						
T22	2.2.21 Tension brake assembly	T/B	9	1	2	3	4	5	6	7	8																							
T20	2.2.21 Reel disk (supply side)	T/B	10	1	2	3	4	5	6	7	8																				9			
T24	2.2.21 Tension arm assembly	T/B	10	1	2	3	4	5	6	7	8																				9			
B9	2.2.21 Tension arm bearing	T/B	10	1	2	3	4	5	6	7	8																				9			
T18	2.2.22 Idler lever	T/B	17	1	2	3	4	5	6	7	8					9	10	11			12		13	14							15	16		
T16	2.2.22 Idler arm assembly	T/B	18	1	2	3	4	5	6	7	8					9	10	11			12		13	14							15	16	17	
B19	- Brake lever (∗1)	T/B	18	1	2	3	4	5	6	7	8					9	10	11			12		13	14				15	16	17				
B16	- Rotary encoder guide	T/B	19	1	2	3	4	5	6	7	8					9	10	11			12		13	14				15	16	17				18

Table 2-1-5b

Note:

- ***The parts with marked (∗) have different types of mechanisms (standard type or high-speed FF/REW type).***
  - ***∗1 : Uses the standard type mechanism only.***
  - ***∗2 : Uses the high-speed FF/REW type mechanism only.***

2.2 Replacement of major parts

2.2.1 Before starting disassembling (Phase matching between mechanical parts)

The mechanism of this unit is closely linked with the rotary encoder and system controller circuits.
Since the system controller detects the status of mechanical operation in response to phases of the rotary encoder (internal switch positions), the mechanism may not operate properly unless such parts as the rotary encoder, control plate, loading arm gear, control cam, cassette gear, limit gear, relay gear and drive gear are installed in their correct positions.
Especially, this model is not provided with any cassette housing assembly, so that cassette loading and unloading must be accomplished by operation of the cassette holder assembly. The latter is in turn driven by such parts as the drive gear, relay gear and limit gear. Exercise enough care, therefore, to have the phases of all this gear matching one another. (For information on phase matching of the mechanism, see the instructions on how to install individual parts.)
This unit is provided with a mechanism assembly mode. It is therefore necessary to enter this mode for assembling and disassembling procedures.
This mode is usually not in use, manually set it when it is required.

2.2.2 How to set the "Mechanism assembling mode"

Remove the mechanism assembly and place it bottom side up. (See SECTION 1 DISASSEMBLY.) Turn the worm gear toward the front so that the guide hole of the control cam is brought into alignment with the hole at the mechanism assembly chassis. This position renders the mechanism assembling mode operational. Make sure that the control plate is located in alignment with the mark E. (See Fig.2-2-2a.)

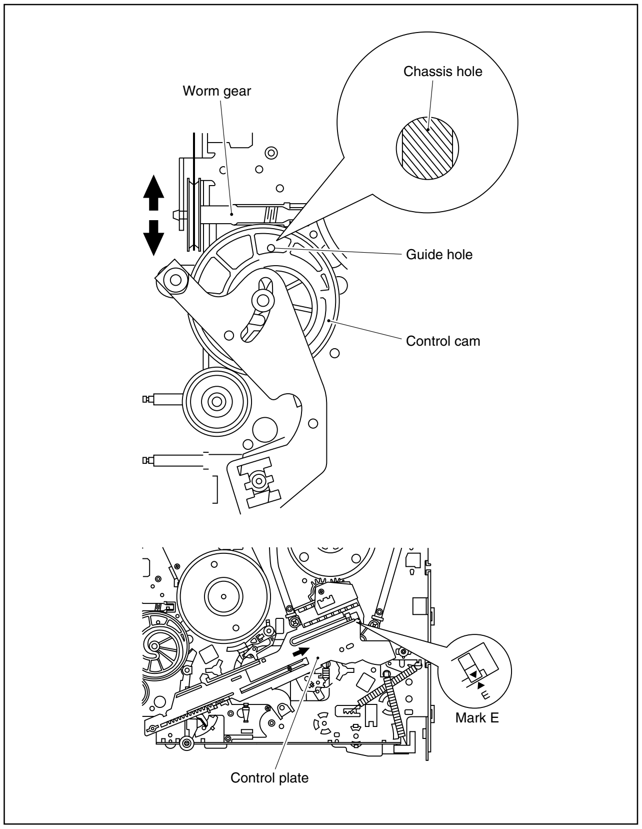


Fig. 2-2-2a

2.2.3 Cassette holder assembly

1. How to remove

(1) Remove the guide rail and roller cam assembly. (See Fig.2-2-3a.)
(3 lugs on the guide rail and one lug on the roller cam assembly)

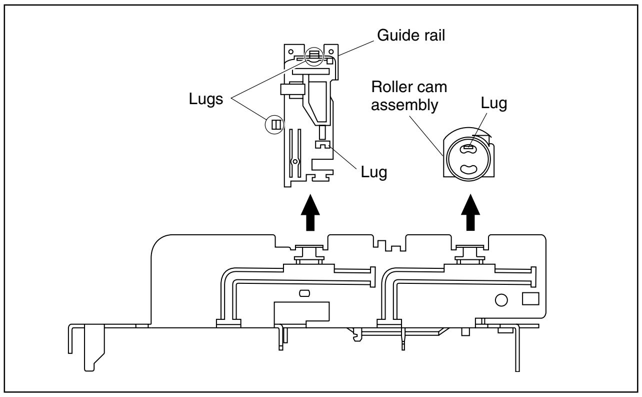


Fig. 2-2-3a

(2) Remove the two slit washers and remove the cassette housing bracket. (See Fig.2-2-3b.)

(3) Remove the opener guide, spring(A), door opener, relay gear and limit gear. (See Fig.2-2-3b.)

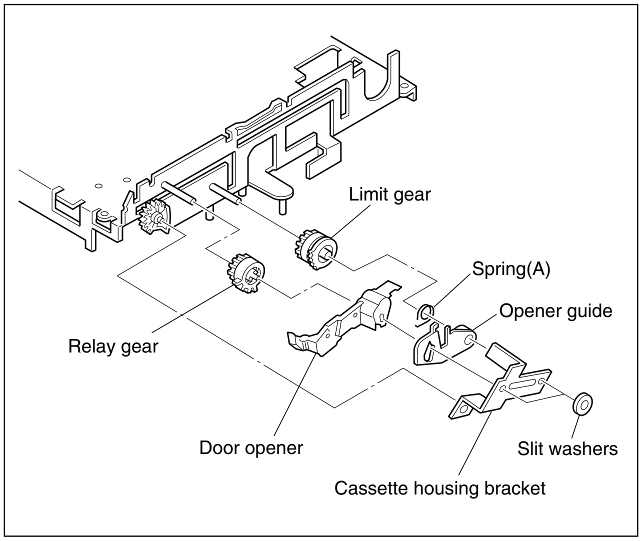


Fig. 2-2-3b

(4) While swinging the lock levers (R) and (L) of the cassette holder assembly toward the front, slide the cassette holder assembly until its legs come to where the guide rail and the roller cam assembly have been removed (so that the drive arm is upright). (See Fig.2-2-3c.)

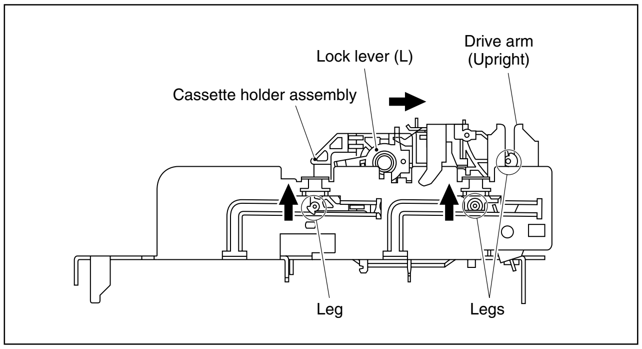


Fig. 2-2-3c

(5) While holding the left side of the cassette holder, lift the cassette holder assembly so that the three legs on the left side are all released. Then pull the legs (A) and (B) on the right side out of the rail and also pull up the leg(C). (See Fig.2-2-3d and Fig.2-2-3e.)

(6) Draw out the drive gear, and remove the drive arm.

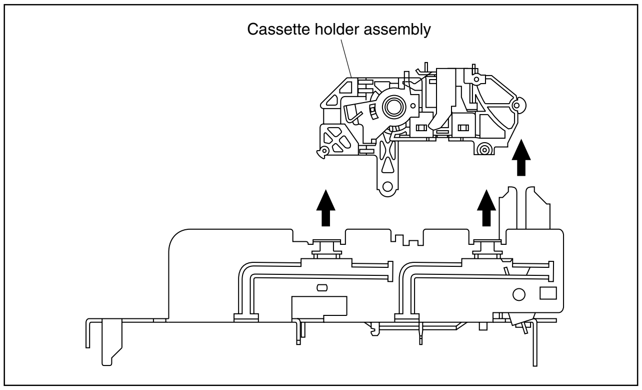


Fig. 2-2-3d

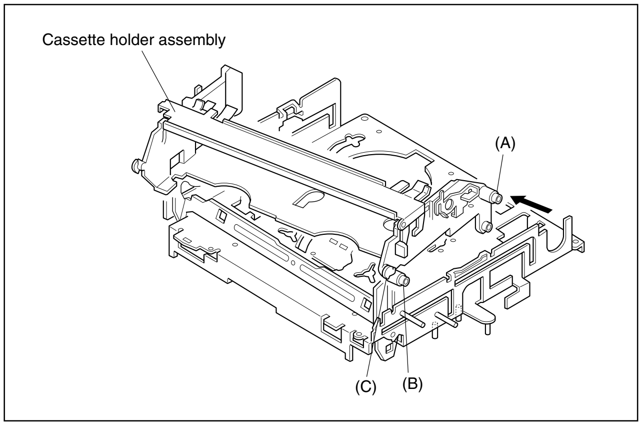


Fig. 2-2-3e

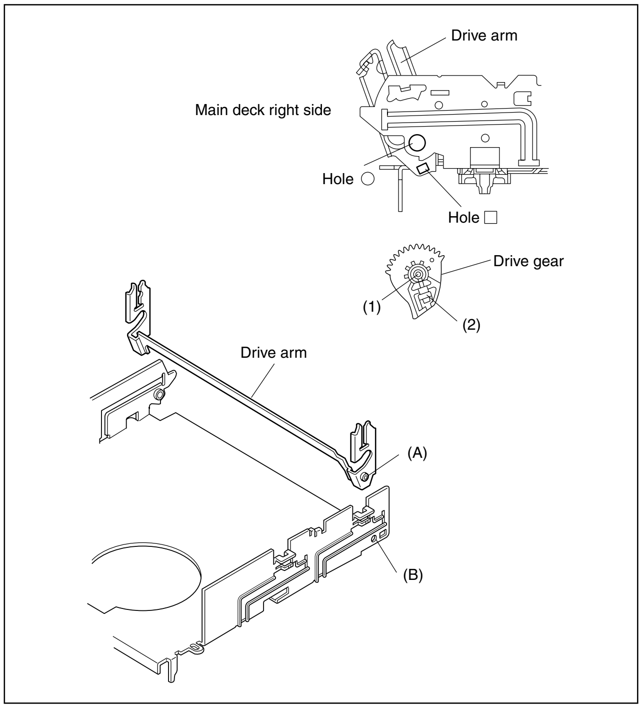


Fig. 2-2-3f

2. How to install (Phase matching)

(1) Insert the section (A) of the drive arm into the section (B) of the main deck.

(2) Insert the section (1) of the drive gear into the round hole, and the section (2) into the square hole on the drive arm. (See Fig.2-2-3f.)

(3) Hold the drive arm upright and fit the leg (C) on the right side of the cassette holder assembly into the groove. (See Fig.2-2-3g.)

(4) While swinging the lock lever (R) of the cassette holder assembly toward the front, put the legs (A) and (B) into the rail. (See Fig.2-2-3g.)

(5) Drop the three legs on the left side of the cassette holder assembly into the groove at one time. (See Fig.2-2-3h.)

(6) Slide the whole cassette holder assembly toward the front to bring it to the eject end position.

(7) Install the limit gear so that the notch on the outer circumference of the limit gear is brought into alignment with the guide hole on the main deck. (See Fig.2-2-3i.)

(8) Install so that the notch on the periphery of the relay gear is aligned with the notch of the main deck and that hole A of the relay gear is aligned with the hole A of the limit gear and that hole B of the relay gear is aligned with the hole B of the drive gear. (See Fig.2-2-3i.)

(9) Install the door opener, opener guide, spring(A) and cassette housing bracket and fasten the two slit washers.

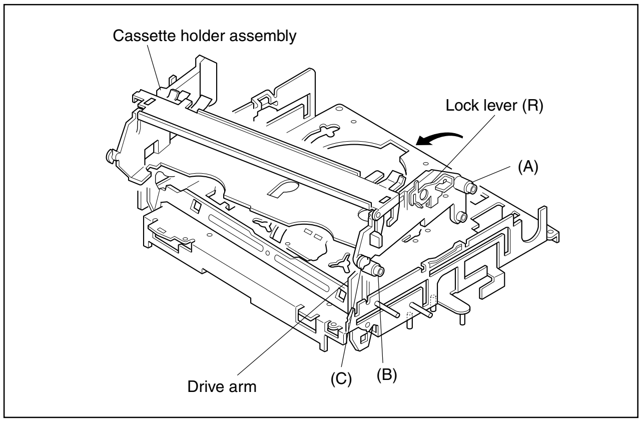


Fig. 2-2-3g

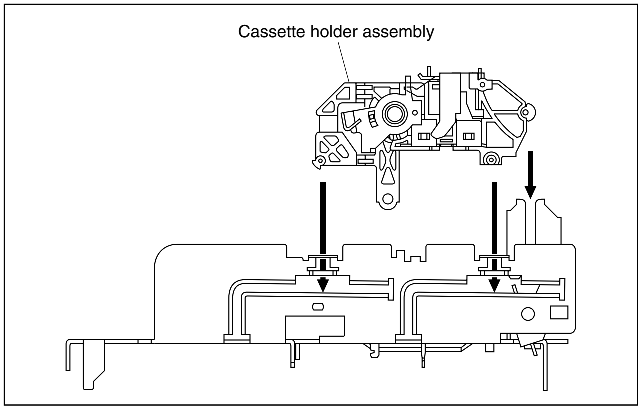


Fig. 2-2-3h

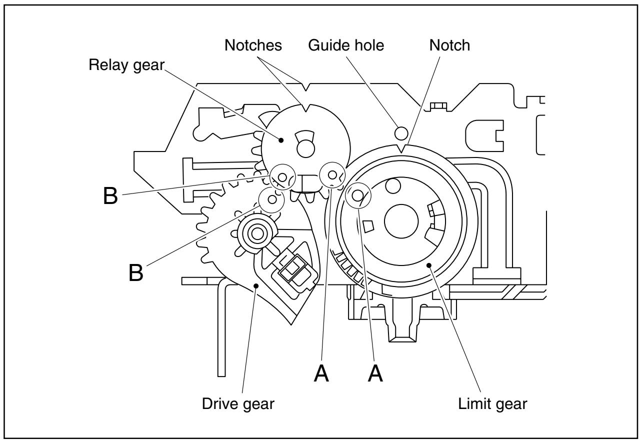


Fig. 2-2-3i

2.2.4 Pinch roller arm assembly

1. How to remove

(1) Remove the spring from the hook of the press lever assembly.
(2) Remove the slit washer and remove the pinch roller seat 2. (See Fig.2-2-4a.)
(3) Remove the pinch roller arm assembly by pulling it up.

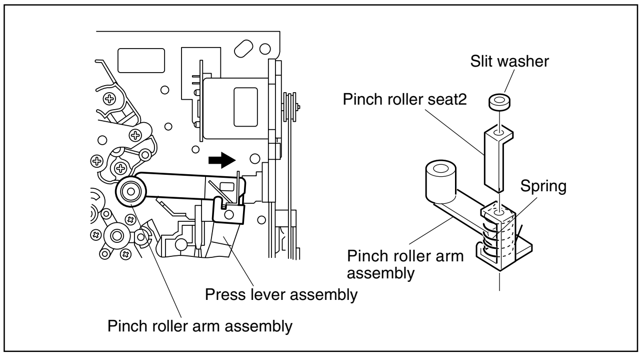


Fig. 2-2-4a

2.2.5 Guide arm assembly and press lever assembly

1. How to remove

(1) Remove the spring and expand the lug of the lid guide in the arrow-indicated direction. Then remove the guide arm assembly by pulling it up.
(2) Remove the press lever assembly by pulling it up. (See Fig.2-2-5a.)

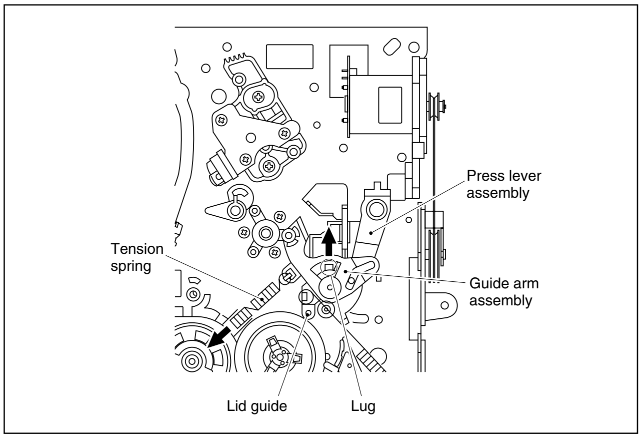


Fig. 2-2-5a

2.2.6 A/C head

1. How to remove

(1) Remove the two screws (A) and remove the A/C head together with the head base.
(2) When replacing only the A/C head, remove the three screws (B) while controlling the compression spring.

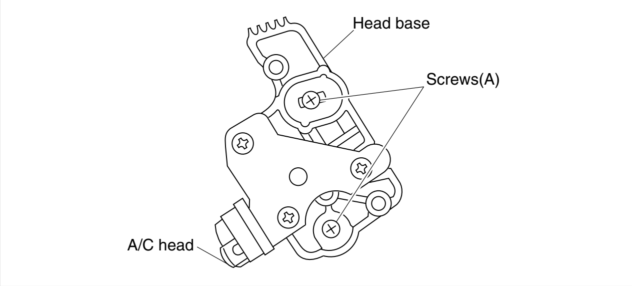


Fig. 2-2-6a

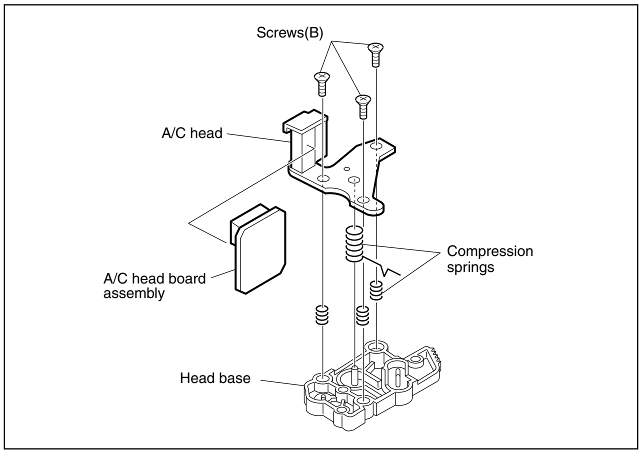


Fig. 2-2-6b

2. How to install

(1) To make the post-installation adjustment easier, set the temporary level as indicated in Fig.2-2-6c. Also make sure that the screw center (centre) is brought into alignment with the center (centre) position of the slot.

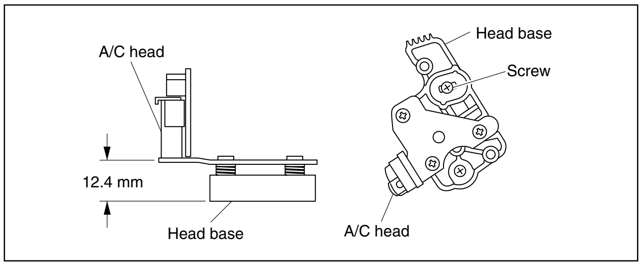


Fig. 2-2-6c

2.2.7 Loading motor

1. How to remove

(1) Remove the belt wound around the worm gear.
(2) Open the two lugs of the motor guide and remove the loading motor, loading motor board assembly and motor guide altogether by pulling them up.
(3) When replacing the loading motor board assembly, take care with the orientation of the loading motor. (Install so that the loading motor label faces upward.)
(4) When the motor pulley has been replaced, choose the fitting dimension as indicated in Fig.2-2-7a.

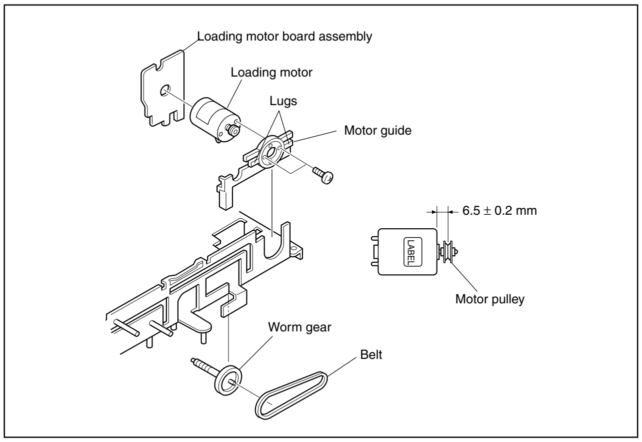


Fig. 2-2-7a

2.2.8 Capstan motor

1. How to remove

(1) Remove the belt (capstan) on the mechanism assembly back side.

(2) Remove the three screws (A) and remove the capstan motor.

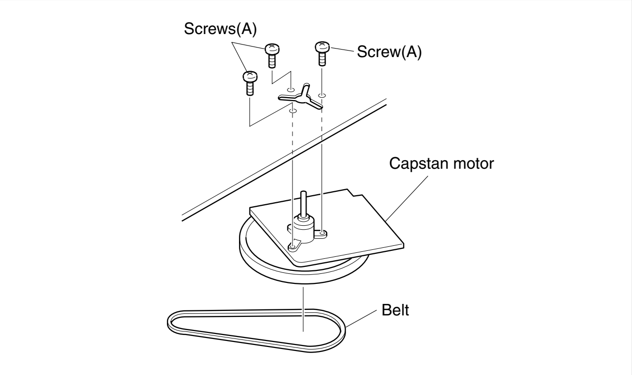


Fig. 2-2-8a

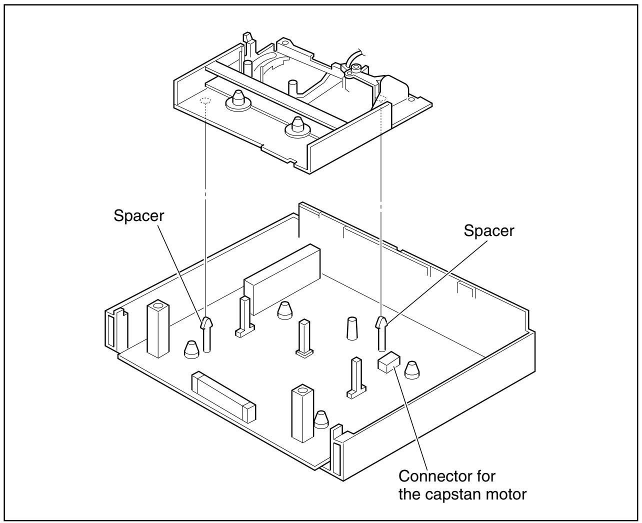


Fig. 2-2-8b

2. How to install (Centering the mounting position)

When the capstan motor has once been removed and then reinstalled out of the initial correct position in the rotational direction, the capstan motor current may be unstable during operation in high or low temperatures. This may result in greater Wow & Flutter and occasionally in power breakdown because of current over - load. Install the capstan motor while following the procedure given below.

(The capstan motor is centrally located when the unit is shipped from the factory.)

(1) Provisionally tighten the three screws (A) securing the capstan motor.

(2) Install the mechanism assembly to which the capstan motor is provisionally fastened on the bottom chassis which incorporates the Main board assembly. (No need to tighten the screws for mounting the mechanism.)
Make sure that all the connectors for the mechanism assembly and the Main board assembly are correctly installed as indicated in Fig. 2-2-8b.

(3) Making sure that the connector for the capstan motor is correctly mounted, and securely tighten the three screws (A).

Note:

- ***When the capstan motor has been replaced with a new one, perform recording in the EP(or LP) mode for at least 2 minutes at normal temperatures immediately before starting the FF/REW or SEARCH operations (Aging).***

2.2.9 Pole base assembly (supply or take-up side)

1. How to remove

(1) Remove the UV catcher 2 on the removal side by loosening the screw (A).

(2) Remove the pole base assembly on the supply side from the mechanism assembly by loosening the screw (B) on the mechanism assembly back side and sliding the pole base assembly toward the UV catcher 2.

(3) As for the pole base assembly on the take-up side, turn the pulley of the loading motor to lower the cassette holder because the screw (B) is hidden under the control plate. (See the “Procedures for Lowering the Cassette holder assembly” of 1.3 DISASSEMBLY/ASSEMBLY METHOD.) Further turn the motor pulley to move the cassette holder until the screw (B) is no longer under the control plate (in the half-loading position). Then remove it as done for the supply side by removing the screw (B).

Note:

- ***After reinstalling the Pole base assembly and the UV catcher2, be sure to perform compatibility adjustment.***

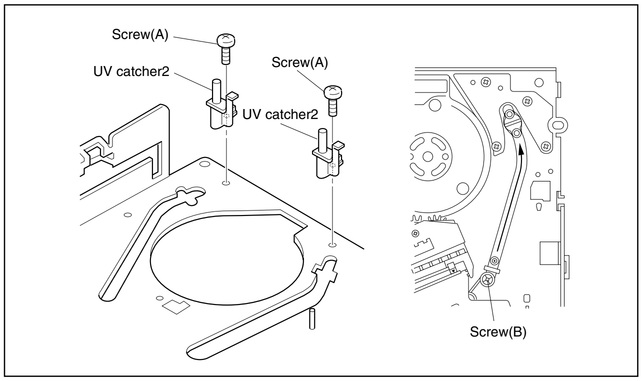


Fig. 2-2-9a

2.2.10 Rotary encoder

1. How to remove

(1) Remove the screw (A) and remove the rotary encoder by pulling it up. (See Fig. 2-2-10a.)

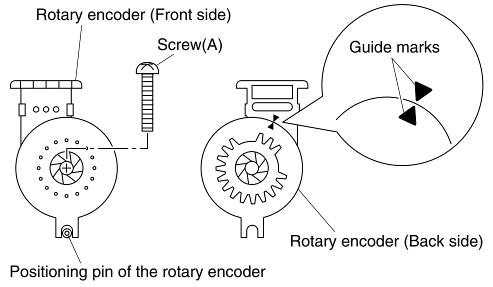

Rotary encoder (Front side)
Screw(A)
Guide marks
Rotary encoder (Back side)
Positioning pin of the rotary encoder

Fig. 2-2-10a

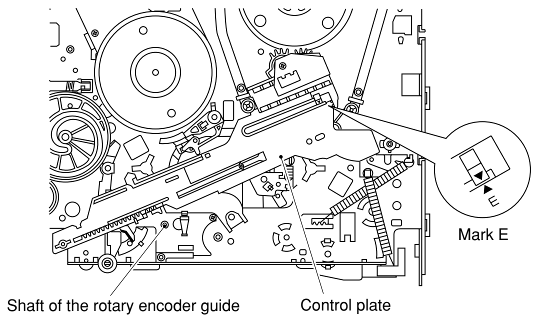


Fig. 2-2-10b

2. How to install (Phase matching)

(1) Make sure that the mark E of the control plate is in alignment with the mark ▼ of the loading arm gear shaft and bring the guide marks on the rotary encoder into alignment as indicated in Fig.2-2-10a. (See Fig. 2-2-10a and Fig. 2-2-10b.)

(2) Turn over the rotary encoder with its guide marks kept in alignment and install it by fitting on the shaft of the rotary encoder guide and the positioning pin.

(3) Tighten the screw (A) to complete the installation.

2.2.11 Clutch unit

(1) Remove the belt wound around the capstan motor and the clutch unit.

(2) Remove the slit washer and remove the clutch unit.

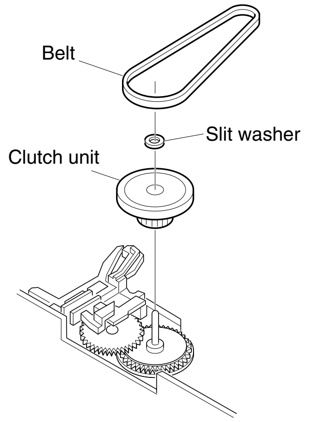


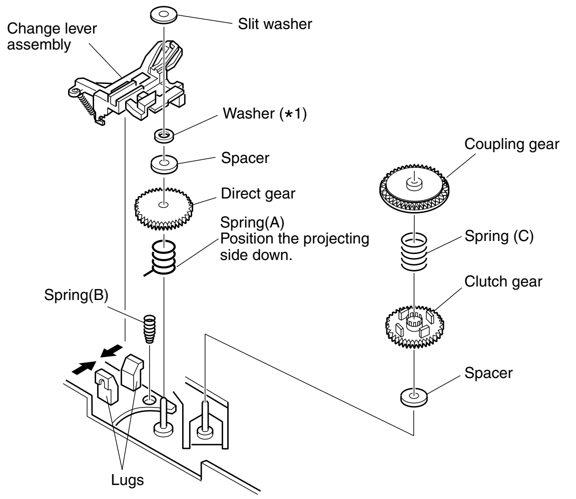
Fig. 2-2-11a

2.2.12 Change lever assembly, direct gear, clutch gear and coupling gear

1. How to remove

(1) Release the two lugs of the rotary encoder guide in the arrow-indicated direction and remove the change lever assembly.

(2) Remove the slit washer retaining the direct gear and remove the latter.
Take care so as not to lose the washer and spring. (See Fig.2-2-12a.)



Note:

- The parts with marked (⋆) have different types of mechanisms (standard type or high-speed FF/REW type).

⋆1 : Uses the standard type mechanism only.
⋆2 : Uses the high-speed FF/REW type mechanism only.

Fig. 2-2-12a

2. How to install

(1) Install the clutch gear, spring (A), spring (C), direct gear, spacer and others to the individual shafts of the main deck, and finally the slit washer. (See Fig.2-2-12a.)

(2) Let the spring (B) drops into the rotary encoder guide hole and install the change lever assembly.(Take care not to mistake a direction of the spring.) The point is to slightly lift the coupling gear and catch it from the both sides with the assembly. (See Fig.2-2-12b.)

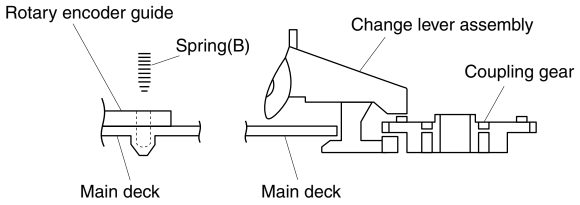


Fig. 2-2-12b

2.2.13 Link lever

1. How to remove

(1) Remove the two slit washers.

(2) Remove the link lever by lifting it from the shaft retained by the slit washers. Then swing the link lever counterclockwise and remove it from the locking section of the control plate.

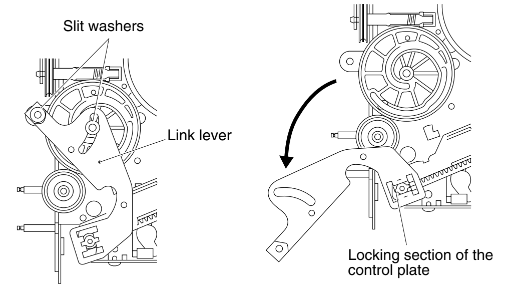


Fig. 2-2-13a

2. How to install (Phase matching)

(1) Slide the control plate so that its mark E is aligned with the mark ▼ on the loading arm gear shaft. (See Fig.2-2-13b.)

(2) Rotate the worm gear until the guide hole of the control cam is aligned exactly with the guide hole of the main deck. (See Fig.2-2-13c.)

(3) Insert the link lever into the locking section of the control plate. (See Fig.2-2-13a.)

(4) Rotate the link lever clockwise so that it is installed on the shafts in the center (centre) and on the left of the control cam.

(5) Fasten the slit washers at these two points.

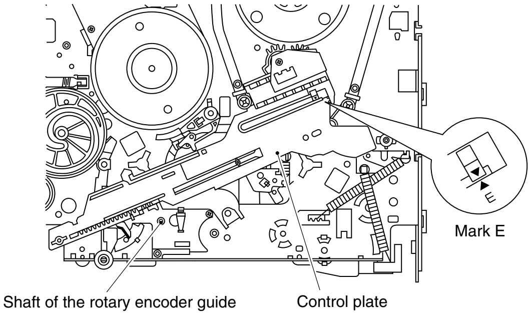


Fig. 2-2-13b

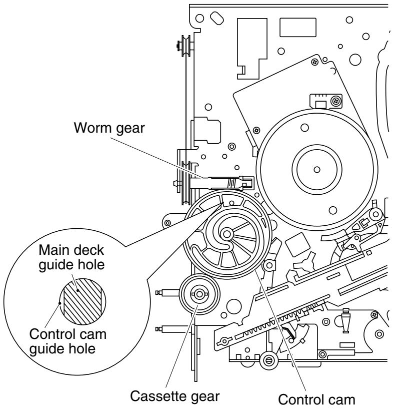


Fig. 2-2-13c

2.2.14 Cassette gear, control cam and worm gear

1. How to remove

(1) Remove the control cam by lifting it.

(2) Open the two lugs of the cassette gear outward and pull the latter off.

(3) Remove the belt wound around the worm gear and the loading motor.

(4) Open the lug of the lid guide outward and remove the worm gear.

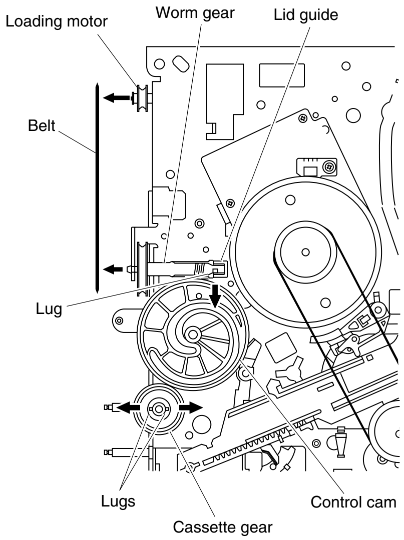


Fig. 2-2-14a

2.2.15 Control plate

1. How to remove

(1) Remove the screw (A) retaining the control bracket 1 and remove the latter.

(2) Slide the control plate as indicated by the arrow and remove the control plate. (See Fig.2-2-15a.)

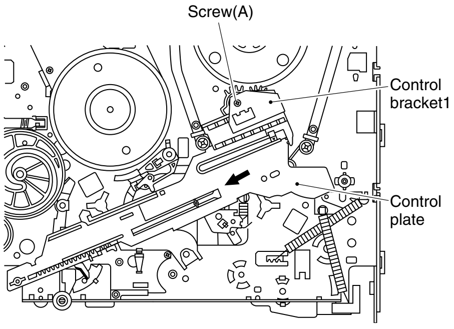


Fig. 2-2-15a

2. How to install (Phase matching)

(1) Adjust the position of the idler arm assembly pin as indicated in Fig.2-2-15b (to the left of center (centre) of the R section).

(2) Bring the guide hole of the take-up lever into alignment with the hole at the control plate guide and fix the position by inserting a 1.5 mm hexagonal wrench.

(3) Install the control plate so that the section A of the loading arm gear shaft fits into the hole (A) of the control plate, the section B of the control plate guide into the hole (B), and the control plate comes under the section C of the rotary encoder guide and the section D of the loading arm gear shaft while press-fit the pole base assmebly (supply side) as indicated by the arrow. It is important that the tension arm assembly shaft is positioned closer toward you than the control plate. (See Fig.2-2-15c.)
(4) Make sure that the mark E of the control plate is in alignment with the mark ▼ of the loading arm gear shaft. (See Fig.2-2-15c.)
(5) Pull off the hexagonal wrench for positioning.

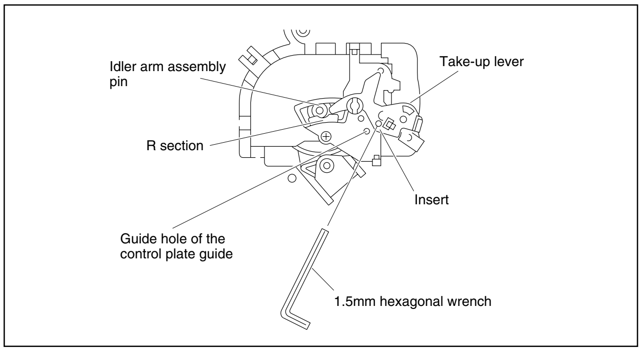


Fig. 2-2-15b

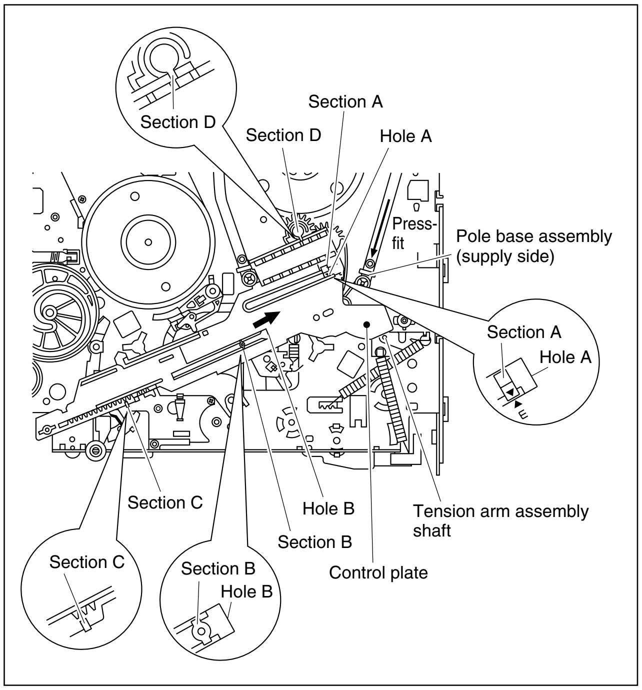


Fig. 2-2-15c

2.2.16 Loading arm gear (supply or take-up side) and loading arm gear shaft

1. How to remove

(1) Remove the loading arm gear (supply side) by loosening the screw (A). (See Fig. 2-2-16a.)
(2) Remove the screw (B) and remove the torsion arm from the pole base assembly (take-up side). (See Fig.2-2-16a.)
(3) Turn the loading arm gear (take-up side) clockwise so that the notch of the loading arm gear (take-up side) is in alignment with the projection of the loading arm gear shaft and lift it.
Likewise, turn the loading arm counterclockwise so that the notch is in alignment with the projection and remove the loading arm gear (take-up side). (See Fig.2-2-16a and Fig. 2-2-16b.)
(4) When removing the loading arm gear shaft, be sure of first removing the screw retaining the drum assembly (on the back side of the loading arm gear shaft). Then remove the screw (C) and remove the loading arm gear shaft by sliding it.

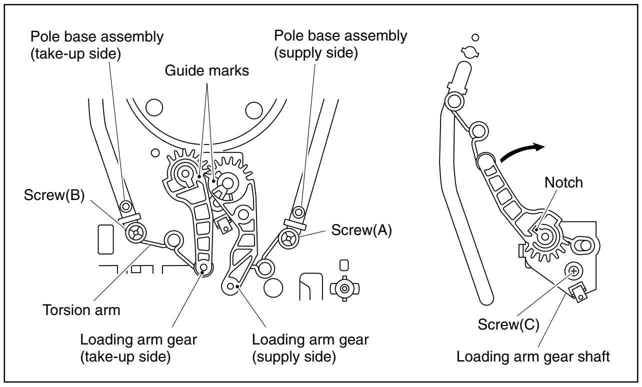

Pole base assembly (take-up side)
Pole base assembly (supply side)
Guide marks
Screw(B)
Screw(A)
Notch
Torsion arm
Loading arm gear (take-up side)
Loading arm gear (supply side)
Screw(C)
Loading arm gear shaft

Fig. 2-2-16a

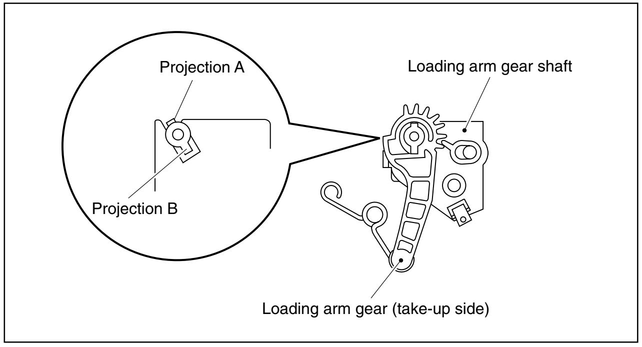


Fig. 2-2-16b

2. How to install

(1) Align the notch of the loading arm gear (take-up side) to the projection B of the loading arm gear shaft and slip it over. Then rotate it clockwise for alignment with the projection A and slip it down to the bottom. (See Fig.2-2-16b.)
(2) Then turn the loading arm gear (take-up side) counterclockwise. Hang the torsion arm on the pole base assembly (take-up side) and tighten the screw (B).
(3) Install the loading arm gear (supply side) so that the guide mark of the loading arm gear (take-up side) is in alignment with the guide mark of the loading arm gear (supply side). Then hang the torsion arm on the pole base assembly (supply side) and tighten the screw (A). (See Fig.2-2-16a.)

2.2.17 Take-up lever, take-up head and control plate guide

(1) Remove the spring of the take-up lever from the main deck.
(2) Remove the lug (A) of the take-up lever from the main deck and pull out the take-up lever and the take-up head together.
(3) Remove the screw (A).
(4) Align the idler arm assembly pin in the center (centre) of the R section of the control plate guide, remove the control plate guide lugs (B) and (C) from the main deck, and remove the control plate guide.

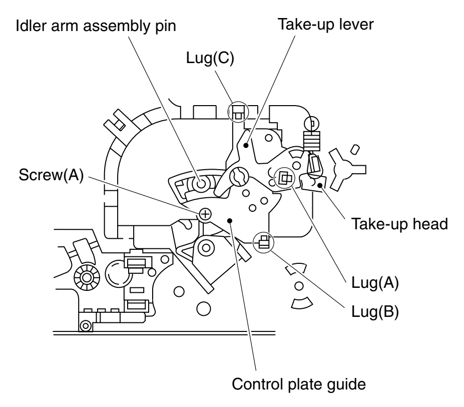


Fig. 2-2-17a

2.2.18 Capstan brake assembly

1. How to remove

(1) Move the lug (A) of the capstan brake assembly in the arrow-indicated direction so that it comes into alignment with the notch of the main deck. (See Fig. 2-2-18a.)
(2) Remove the lug (B) of the capstan brake assembly from the main deck and remove the capstan brake assembly.

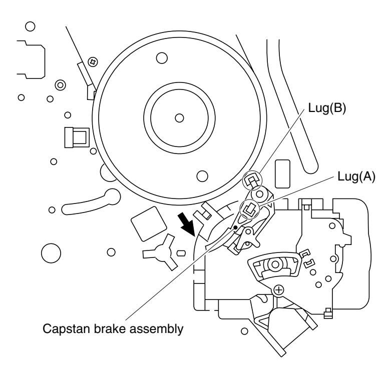


Fig. 2-2-18a

2.2.19 Sub brake assembly (take-up side)

1. How to remove

(1) Remove the spring attached to the lid guide and sub brake assembly (take-up side).
(2) Bring the lug (A) of the sub brake assembly (take-up side) into alignment with the notch of the main deck.
(3) Remove the lugs (B) and (C) of the sub brake assembly (take-up side) from the main deck and remove the sub brake assembly (take-up side).

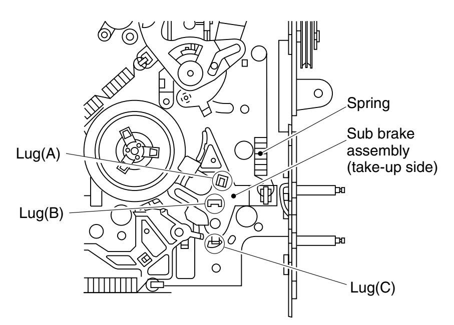


Fig. 2-2-19a

2.2.20 Main brake assembly (take-up side), reel disk (take-up side) and main brake assembly (supply side)

1. How to remove

(1) Move the main brake assembly (take-up side) in the arrow-indicated direction and remove the reel disk (take-up side).
(2) Remove the spring attached to the main brake assembly.
(3) Remove the lug (A) of the main brake assembly (take-up side) and pull out the lug (B) after bringing it into alignment with the main deck notch.
(4) Remove the lugs (C), (D) and (E) of the main brake assembly (supply side) from the main deck and pull them off. (See Fig.2-2-20a.)
(5) When installing the main brake assembly (take-up side), slide the brake lever in the direction as indicated by the arrow to prevent it from hitting the projection of the main brake assembly (take-up side). (See Fig.2-2-20b.)

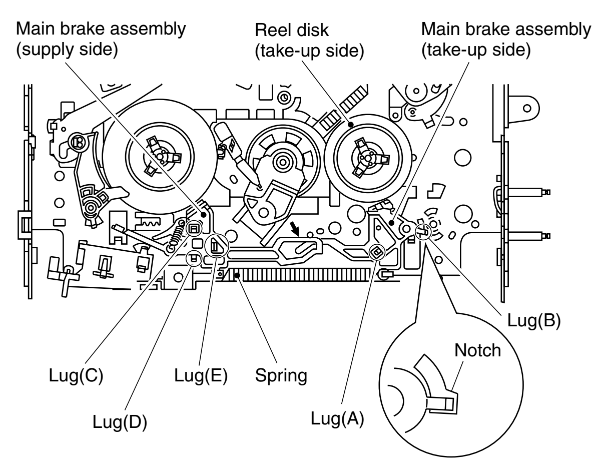
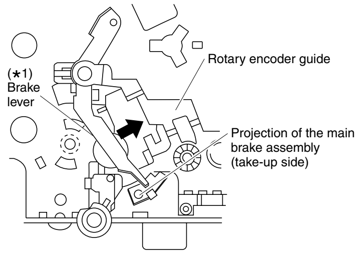

Main brake assembly (supply side)
Reel disk (take-up side)
Main brake assembly (take-up side)
Lug(B)
Notch
Lug(C)
Lug(E)
Spring
Lug(D)
Lug(A)

Fig. 2-2-20a



Note:
- ***The parts with marked (⋆) have different types of mechanisms (standard type or high-speed FF/REW type).***

⋆1 : Uses the standard type mechanism only.

Fig. 2-2-20b

2.2.21 Tension brake assembly, reel disk (supply side) and tension arm assembly

1. How to remove

(1) Remove the three lugs of the tension brake assembly from the main deck and pull them off.

(2) Remove the reel disk (supply side) by loosening in the arrow-indicated direction the main brake assembly (supply side).

(3) Remove the tension spring on the back of the main deck. Then release the lug of the tension arm bearing in the arrow-indicated direction and draw out the tension arm assembly. (See Fig. 2-2-21a.)

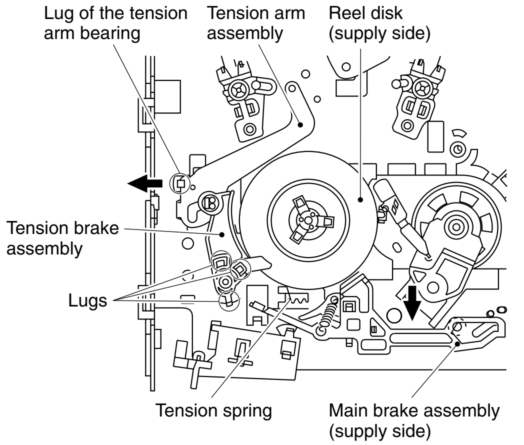


Fig. 2-2-21a

2.2.22 Idler lever, idler arm assembly

1. How to remove

(1) Remove the lug of the idler lever from the main deck and remove the hook fitted in the idler arm assembly hole by lifting it.

(2) Remove the slit washer and pull out the idler arm assembly.

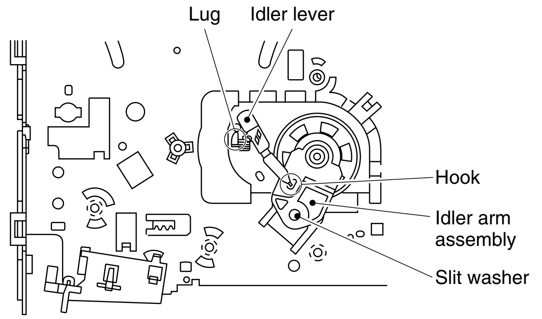


Fig. 2-2-22a

2.2.23 Stator assembly

(1) Remove the flat cable.

(2) Remove the two screws (A), (B) and remove the lug wire.

(3) Remove the stator assembly by lifting in the arrow-indicated direction. (Take care that the brush spring does not jump out.)

Notes:

- ***Be careful not to lose the brush and spring.***
- ***There are some models that do not use the lug wire. Refer to the parts list for these models.***
- ***When tightening the screw (B), place the caulked part of the lug terminal near to the shaft of the drum and then tighten it.***
- ***After installation, be sure to perform the switching point adjustment according to the electrical adjustment procedure.***

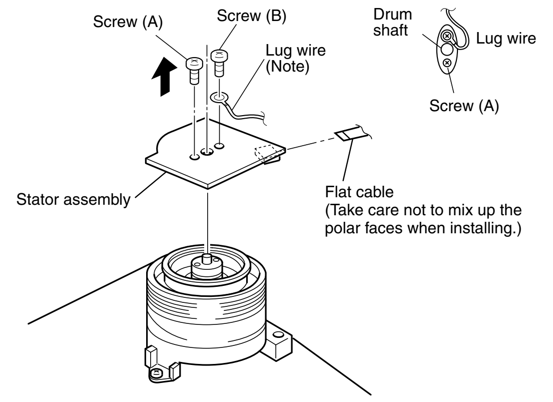


Fig. 2-2-23a

2.2.24 Rotor assembly

1. How to remove

(1) Remove the stator assembly.

(2) Remove the two screws (B) and remove the rotor assembly.

2. How to install

(1) Match the phases of the upper drum assembly and the rotor assembly as indicated in Fig.2-2-24a.

(2) Place the upper drum assembly hole (a) over the rotor assembly holes (b) (with three holes to be aligned) and tighten the two screws (B). (See Fig.2-2-24a.)

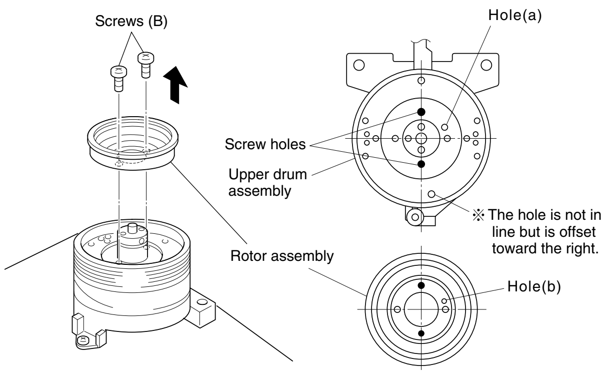


Fig. 2-2-24a

2.2.25 Upper drum assembly

Notes:

- ***To replace the upper drum assembly only may not be possible with some models. For upper drum assembly replacement, refer to the parts list. (When the parts number of the upper drum assembly is not listed on the parts list, then this cannot be replaced.)***
- ***When replacement is required, control the up- down movement of the brush. Never apply grease.***
- ***When replacing the upper drum assembly, replace it the together with the washer.***

1. How to remove

(1) Remove the stator assembly and rotor assembly.
(2) Loosen the screw of the collar assembly using a 1.5 mm hexagonal wrench and remove the collar assembly. Also remove the brush, spring and cap at one time.
(3) Remove the upper drum assembly and remove the washer using tweezers.

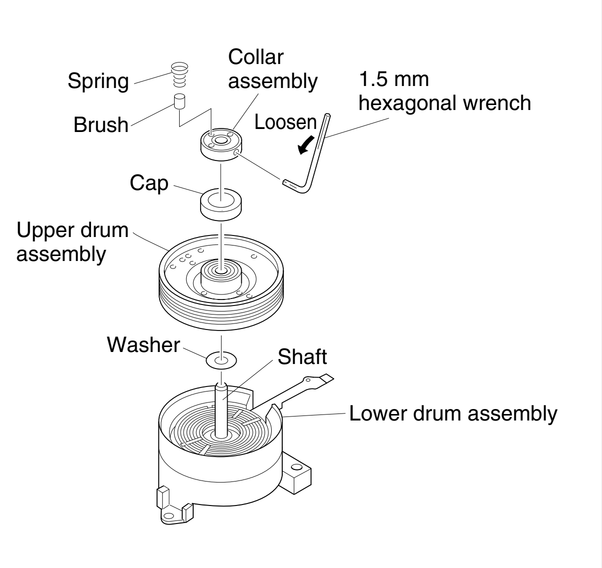


Fig. 2-2-25a

2. How to install

(1) Clean the coil parts of the lower drum assembly and the newly installed upper drum assembly with an air brush in advance. (See Fig.2-2-25b.)
(2) Install a new washer and upper drum assembly on the drum shaft. (See Fig.2-2-25a.)
(3) Install the cap to the upper drum assembly.
(4) Position the collar assembly as indicated in Fig.2-2-25c while controlling its up- down movement.
(5) Secure the collar assembly in position with a hexagonal wrench while pressing its top with the fingers.
(6) After installation, gently turn the upper drum assembly with your hand to make sure that it turns normally. Then install the brush and the spring.
(7) Install the rotor assembly and stator assembly according to Fig 2-2-23a and 2-2-24a.
(8) When installation is complete, clean the upper drum assembly and lower drum assembly and carry out the following adjustments.

- PB switching point adjustment
- Slow tracking adjustment
- Compatibility adjustment (Be sure to check for compatibility for the EP (or LP) mode.)

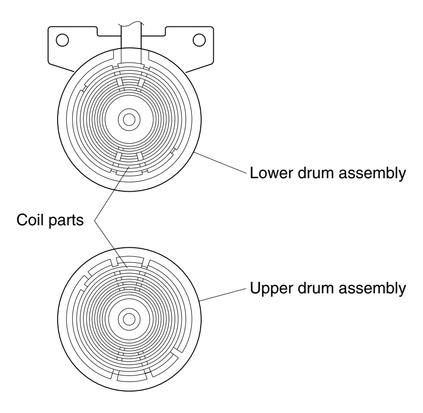


Fig. 2-2-25b

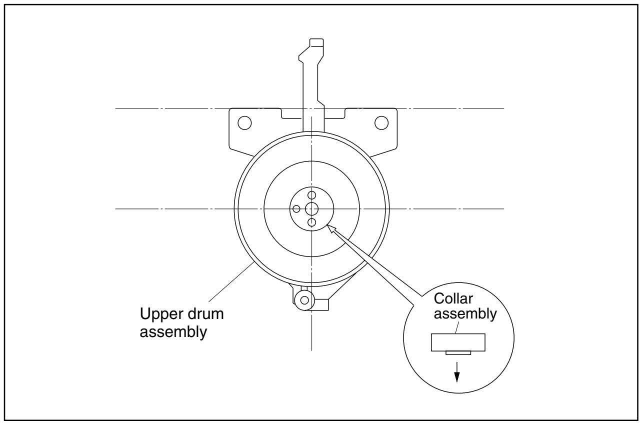


Fig. 2-2-25c

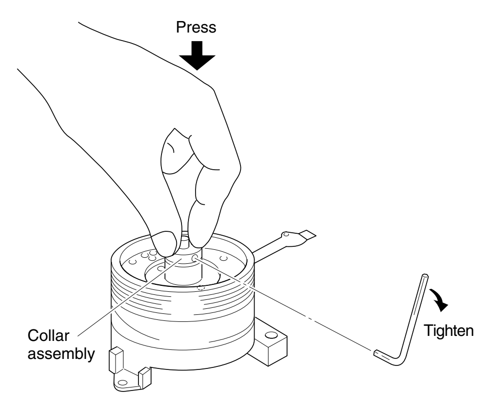


Fig. 2-2-25d

2.3 Compatibility adjustment

Notes:

- ***Although compatibility adjustment is very important, it is not necessary to perform this as part of the normal servicing work. It will be required when you have replaced the A/C head, drum assembly or any part of the tape transport system.***
- ***To avoid any damage to the alignment tape while performing the compatibility adjustment, get a separate cassette tape (for recording and play back) ready to be used for checking the initial tape running behavior.***
- ***Unless otherwise specified, all measuring points and adjustment parts are located on the Main board.***
- ***When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received). (See SECTION 1 DISASSEMBLY.)***

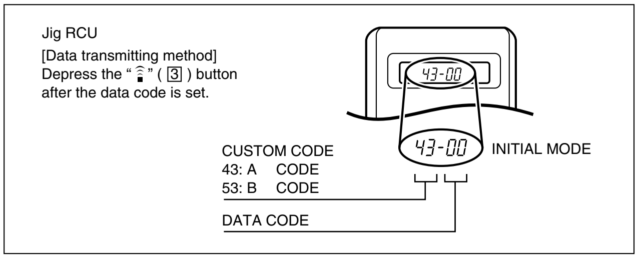

Jig RCU
[Data transmitting method]
Depress the " ⇡ " (3) button
after the data code is set.
43-00
43-00
INITIAL MODE
CUSTOM CODE
43: A CODE
53: B CODE
DATA CODE

Fig. 2-3a Jig RCU [PTU94023B]

2.3.1 FM waveform linearity

Signal	(A1) (A2)	• Alignment tape(SP, stairstep, NTSC) [MHP] • Alignment tape(EP, stairstep, NTSC) [MHP-L]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP106 (PB. FM)
External trigger	(E)	• TP111 (D.FF)
Adjustment part	(F)	• Guide roller [Mechanism assembly]
Specified value	(G)	• Flat V.PB FM waveform
Adjustment tool	(H)	• Roller driver [PTU94002]

(1) Play back the alignment tape (A1).
(2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
(3) Set the VCR to the manual tracking mode.
(4) Make sure that there is no significant level drop of the V.PB FM waveform caused by the tracking operation, with its generally parallel and linear variation ensured. Perform the following adjustments when required. (See Fig. 2-3-1a.)
(5) Reduce the V.PB FM waveform by the tracking operation. If a drop in level is found on the left side, turn the guide roller of the pole base assembly (supply side) with the roller driver to make the V.PB FM waveform linear.
If a drop in level is on the right side, likewise turn the guide roller of the pole base assembly (take-up side) with the roller driver to make it linear. (See Fig. 2-3-1c.)
(6) Make sure that the V.PB FM waveform varies in parallel and linearly with the tracking operation again. When required, perform fine-adjustment of the guide roller of the pole base assembly (supply or take-up side).
(7) Unload the cassette tape once, play back the alignment tape (A1) again and confirm the V.PB FM waveform.
(8) After adjustment, confirm that the tape wrinkling does not occur at the roller upper or lower limits. (See Fig. 2-3-1d.)

[Perform adjustment step (9) only for the models equipped with SP mode and EP (or LP) mode.]

(9) Repeat steps (1) to (8) by using the alignment tape (A2).

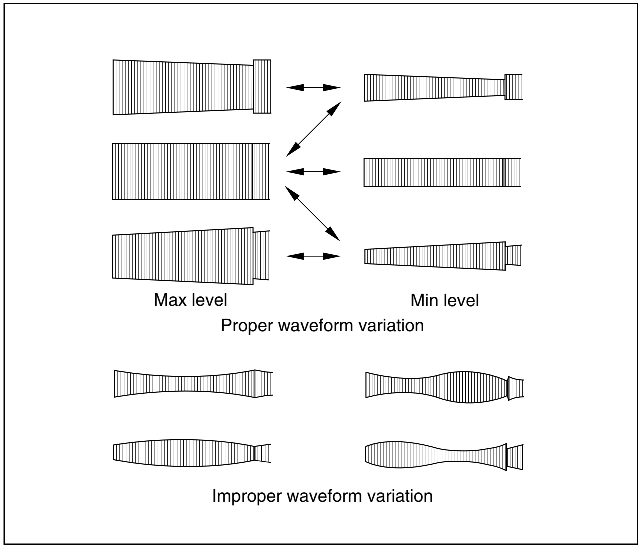


Fig. 2-3-1a

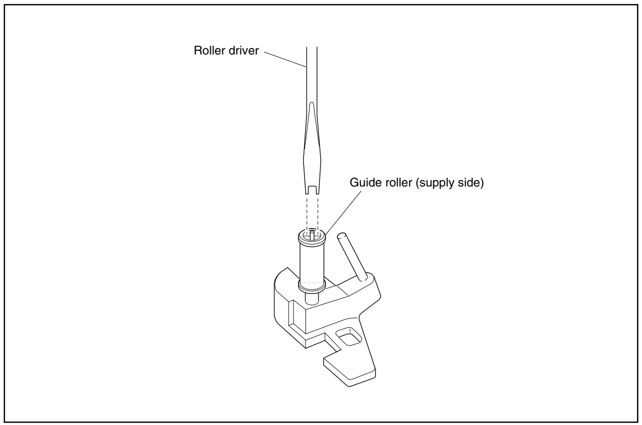


Fig. 2-3-1b

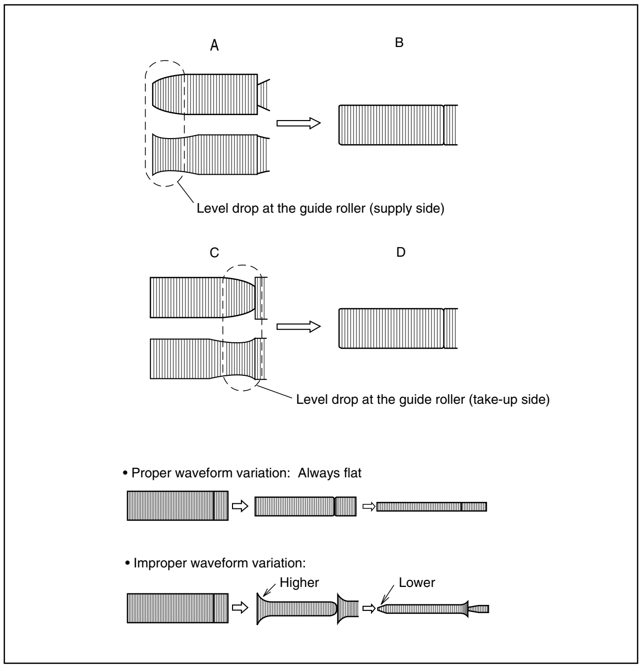

A
B
Level drop at the guide roller (supply side)
C
D
Level drop at the guide roller (take-up side)
• Proper waveform variation: Always flat
• Improper waveform variation:
Higher
Lower

Fig. 2-3-1c

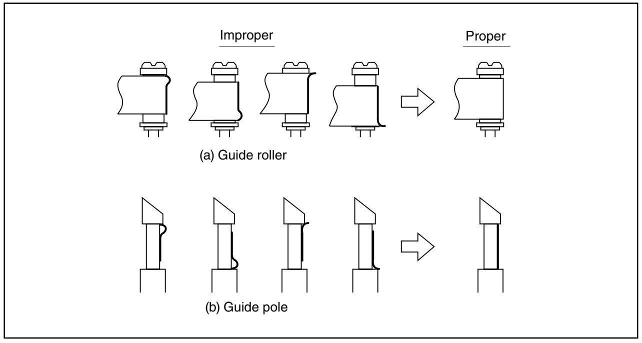


Fig. 2-3-1d

2.3.2 Height and tilt of the A/C head

Note:

- ***Set a temporary level of the height of the A/C head in advance to make the adjustment easier after the A/C head has been replaced. (See Fig.2-2-6c.)***

Signal	(A)	• Alignment tape(SP, stairstep, NTSC) [MHP]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D1) (D2)	• AUDIO OUT terminal • TP4001 (CTL. P)
External trigger	(E)	• TP111 (D.FF)
Adjustment part	(F)	• A/C head [Mechanism assembly]
Specified value	(G)	• Maximum waveform

(1) Play back the alignment tape (A).
(2) Apply the external trigger signal to D.FF (E), to observe the AUDIO OUT waveform and Control pulse waveform at the measuring points (D1) and (D2) in the ALT mode.
(3) Set the VCR to the manual tracking mode.
(4) Adjust the AUDIO OUT waveform and Control pulse waveform by turning the screws (1), (2) and (3) little by little until both waveforms reach maximum. The screw (1) and (3) are for adjustment of tilt and the screw (2) for azimuth.

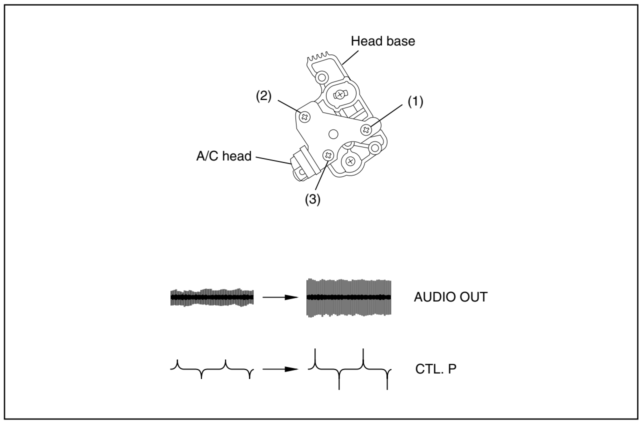


Fig. 2-3-2a

2.3.3 A/C head phase (X-value)

Signal	(A1)	• Alignment tape(SP, stairstep, NTSC) [MHP]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP106 (PB. FM)
External trigger	(E)	• TP111 (D.FF)
Adjustment part	(F)	• A/C head base [Mechanism assembly]
Specified value	(G)	• Maximum V.PB FM waveform
Adjustment tool	(H)	• A/C head positioning tool [PTU94010]

(1) Play back the alignment tape (A1).
(2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
(3) Set the VCR to the manual tracking mode.
(4) Loosen the screws (4) and (5), then set the A/C head positioning tool to the innermost projected part of the A/C head. (See Fig. 2-3-3a.)
(5) Turn the A/C head positioning tool fully toward the capstan. Then turn it back gradually toward the drum and stop on the second peak point position of the V.PB FM waveform output level. Then tighten the screws (4) and (5).
(6) Perform the tracking operation and make sure that the V.PB FM waveform is at its maximum.
If it is not at maximum, loosen the screws (4) and (5), and turn the A/C head positioning tool to bring the A/C head to a position, around where the waveform reaches its maximum for the first time. Then tighten the screws (4) and (5).

[Perform adjustment steps (7) to (10) only for 2 Head models equipped with LP mode.]

(7) Then play back the alignment tape (A2).
(8) Set the VCR to the manual tracking mode.
(9) Perform the tracking operation and make sure that the V.PB FM waveform is at its maximum.
(10) If it is not at maximum, loosen the screws (4) and (5), and turn the A/C head positioning tool to bring the A/C head to a position, around where the waveform reaches its maximum for the first time. Then tighten the screws (4) and (5).

Note:

- ***After adjusting, always perform the confirmation and re-adjustment of the item 2.3.4.***

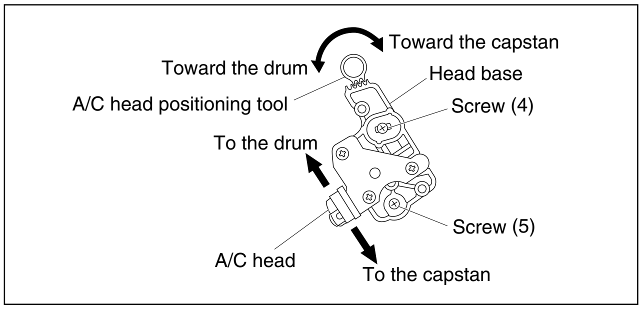


Fig. 2-3-3a

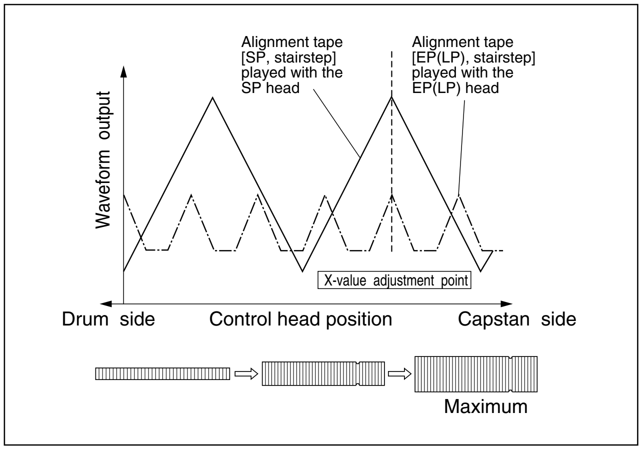


Fig. 2-3-3b

2.3.4 Standard tracking preset

Signal	(A)	• Alignment tape(EP, stairstep, NTSC) [MHP-L]
Mode	(B)	• PB → Auto adjust
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP106 (PB. FM)
External trigger	(E)	• TP111 (D.FF)
Adjustment part	(F)	• Jig RCU: Code “50”
Specified value	(G)	• STOP mode (Maximum V.PB FM waveform)
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Play back the alignment tape (A).
(2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
(3) Confirm that the automatic tracking operation is completed.
(4) Set the VCR to the Auto adjust mode by transmitting the code (F) twice from the Jig RCU. When the VCR enters the stop mode, the adjustment is completed.
(5) If the VCR enters the eject mode, perform adjustment for the audio control head phase (X-value) again.

2.3.5 Tension pole position

Signal	(A)	• Back tension cassette gauge [PUJ48076-2]
Mode	(B)	• PB
Adjustment part	(F)	• Adjust pin [Mechansim assembly]
Specified value	(G)	• 25 - 51 gf•cm (2.45 – 5 × 10^{-3} Nm]

(1) Play back the back tension cassette gauge (A).
(2) Check that the indicated value on the left side gauge is within the specified value (G).
(3) If the indicated value is not within the specified value (G), perform the adjustment in a following procedure.
  1) Set the VCR to the mechanism service mode. (See SECTION 1 DISASSEMBLY.)
  2) Set the VCR to the play back mode and adjust by turning adjustment pin to align the tension arm assembly edge with the main deck hole (A) on the right edge marker. (See Fig. 2-3-5a)

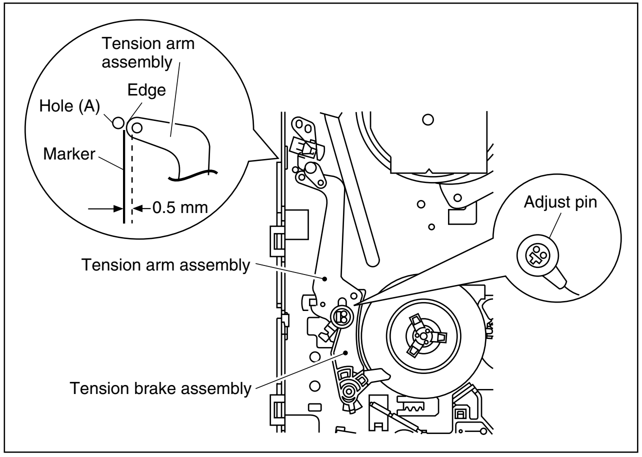
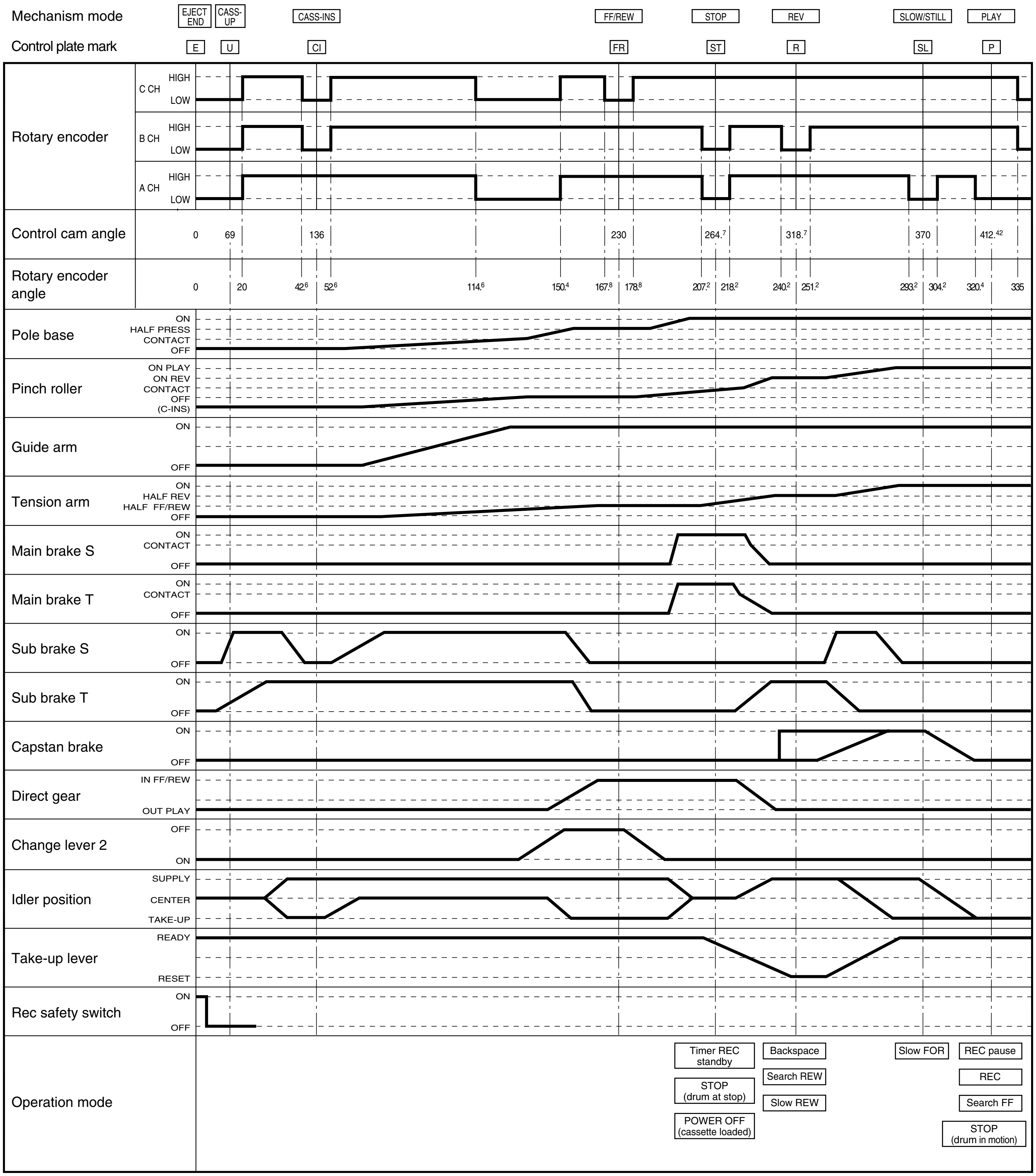


Fig. 2-3-5a

Mechanism Timing Chart



SECTION 3
ELECTRICAL ADJUSTMENT

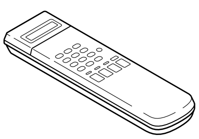
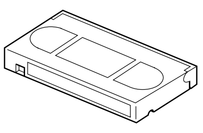
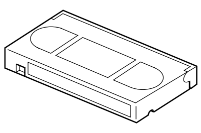
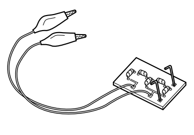
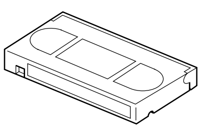
3.1 Precaution

The following adjustment procedures are not only necessary after replacement of consumable mechanical parts or board assemblies, but are also provided as references to be referred to when servicing the electrical circuitry.
In case of trouble with the electrical circuitry, always begin a service by identifying the defective points by using the measuring instruments as described in the following electrical adjustment procedures. After this, proceed to the repair, replacement and/or adjustment. If the required measuring instruments are not available in the field, do not change the adjustment parts (variable resistor, etc.) carelessly.

3.1.1 Required test equipments

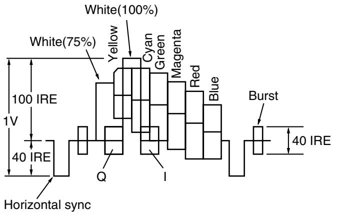
- Color (colour) television or monitor
- Oscilloscope: wide-band, dual-trace, triggered delayed sweep
- Frequency counter
- Audio level meter
- Signal generator: RF / IF sweep / marker
- Signal generator: stairstep, color (colour) bar [NTSC]
- Recording tape
- Digit-key remote controller (provided)

3.1.2 Required adjustment tools

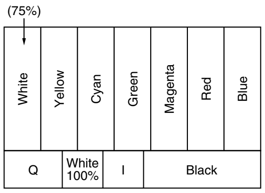
Jig RCU PTU94023B	Alignment tape (SP, stairstep, NTSC) MHP	Alignment tape (EP, stairstep, NTSC) MHP-L
		
LPF PTU93006	Alignment tape (S-VHS, SP/EP, color (colour) bar) MH-1H	
		

3.1.3 Color (colour) bar signal,Color (colour) bar pattern

- **Color bar signal [NTSC]**



- **Color bar pattern [NTSC]**



3.1.4 Switch settings and standard precautions

The SW settings of the VCR and the standard precautions for the electrical adjustments are as follows.

- ***When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received). (See SECTION 1 DISASSEMBLY.)***

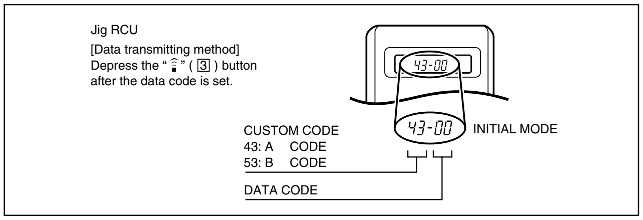

Jig RCU
[Data transmitting method]
Depress the "📶" (3) button
after the data code is set.
43-00
43-00
INITIAL MODE
CUSTOM CODE
43: A CODE
53: B CODE
DATA CODE

Fig. 3-1-4a Jig RCU [PTU94023B]

- ***Set the switches as shown below unless otherwise specified on the relevant adjustment chart. The switches that are not listed below can be set as desired.***
  If the VCR is not equipped with the functions detailed below, setup is not required.

AUTO PICTURE/VIDEO CALIBRATION/ B.E.S.T./D.S.P.C.	OFF
PICTURE CONTROL/SMART PICTURE	NORMAL/NATURAL
VIDEO STABILIZER	OFF
TBC	ON
Digital 3R	ON
VIDEO NAVIGATION/TAPE MANAGER	OFF

- ***If there is a reference to a signal input methed in the signal column of the adjustment chart, "Ext. S-input" means the Y/C separated video signal and "Ext. input" means the composite video signal input.***
- ***Unless otherwise specified, all measuring points and adjustment parts are located on the Main board.***

3.1.5 EVR Adjustment

Some of the electrical adjustments require the adjustment performed by the EVR system. The main unit have EEPROMs for storing the EVR adjustment data and user setups.

Notes:

- ***In the EVR adjustment mode, the value is varied with the channel buttons (+, –). The adjusted data is stored when the setting mode changes (from PB to STOP, when the tape speed is changed, etc.). Take care to identify the current mode of each adjustment item when making an adjustment.***
- ***When changing the address setting in the EVR adjustment mode, use the Jig RCU or the remote controller having numeric keypad with which a numeric code can be directly input.***
  The remote control code of the Jig RCU corresponds to each of the digit keys on the remote controller as follows.

Digit-key	0	1	2	3	4	5	6	7	8	9
Code	20	21	22	23	24	25	26	27	28	29

- ***As the counter indication and remaining tape indication are not displayed FDP during the EVR adjustment mode, check them on the TV monitor screen.***
- ***When performing the EVR adjustment, confirm that the FDP indication is changed to the EVR mode, as shown below.***

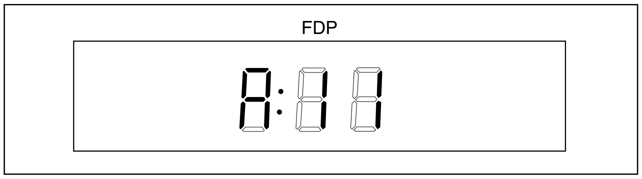


Fig. 3-1-5a EVR mode

3.2 Servo circuit

3.2.1 Switching point

Signal	(A1) (A2)	• Stairstep signal • Alignment tape (SP,stairstep,NTSC) [MHP]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D1) (D2)	• VIDEO OUT terminal (75Ω terminated) • TP106 (PB. FM)
External trigger	(E)	• TP111 (D.FF)/slope : –
Adjustment part	(F)	• Jig code "5A"
Specified value	(G)	• 7.5 ± 0.5H
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Play back the signal (A1) of the alignment tape (A2).
(2) Apply the external trigger signal to D.FF (E) to observe the VIDEO OUT waveform and V.PB FM waveform at the measuring points (D1) and (D2).
(3) Set the VCR to the manual tracking mode.
(4) Adjust tracking so that the V.PB FM waveform becomes maximum.
(5) Set the VCR to the Auto adjust mode by transmitting the code (F) from the Jig RCU. When the VCR enters the stop mode, the adjustment is completed.
(6) If the VCR enters the eject mode, repeat steps (1) to (5) again.
(7) Play back the alignment tape (A2) again, confirm that the switching point is the specified value (G).

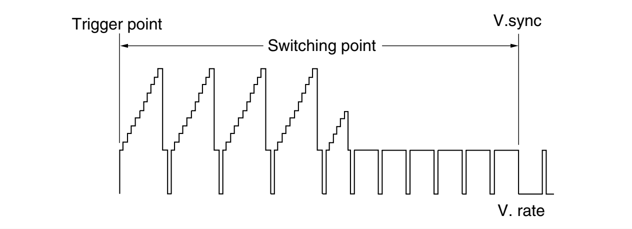


Fig. 3-2-1a Switching point

3.2.2 Slow tracking preset

Signal	(A1) (A2)	• Ext. input • Color (colour) bar signal [NTSC]
Mode	(B1) (B2)	• VHS SP • VHS EP
Measuring point	(D)	• TV-Monitor
Adjustment part	(F)	• Jig code "71" or "72"
Specified value	(G)	• Minimum noise
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Record the signal (A2) in the mode (B1), and play back the recorded signal.
(2) Set the VCR to the manual tracking mode.
(3) Set the VCR to the FWD slow (+1/6x) mode.
(4) Transmit the code (F) from the Jig RCU to adjust so that the noise bar becomes the specified value (G) on the TV monitor in the slow mode.
(5) Set the VCR to the Stop mode.
(6) Confirm that the noise bar is (G) on the TV monitor in the slow mode.
(7) Repeat steps (3) to (6) in the REV slow (–1/6x) mode.
(8) Repeat steps (1) to (7) in the mode (B2).

Note:

- ***For FWD slow (+1/6x) playback, transmit the code "08" from the Jig RCU to enter the slow playback mode, and transmit the code "D0" for REV slow (–1/6x) mode.***

3.3 Video circuit

3.3.1 D/A level

Signal	(A1) (A2) (A3)	• Ext. S-input / Ext. input • Color (colour) bar signal [NTSC] • S-VHS tape
Mode	(B)	• S-VHS • EE
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• VIDEO OUT terminal (75Ω terminated)
Adjustment part	(F)	• VR1201 (D/A LEVEL ADJ) [2D DIGITAL board]
Specified value (Note)	(G)	• 1.00 ± 0.015 Vp-p (reference value)

(1) Insert the cassette tape (A3) to enter the mode (B).
(2) Observe the VIDEO OUT waveform at the measuring point (D).
(3) Check the Y level value when the External S-input (Y/C separated video signal).
(4) Switch the input signal to the External input (composite video signal), and adjust the adjustment part (F) so that the Y level becomes the same value observed in step (3).

Note:

- ***The specified value (G) is just a reference value to be obtained when the External S-Video (Y/C separated video) signal is input. In actual adjustment, set it to the value observed in step (3).***

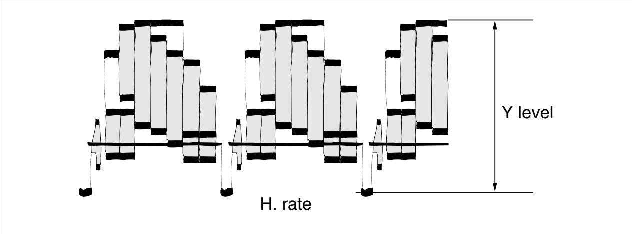


Fig. 3-3-1a D/A level

3.3.2 EE Y/PB Y (S-VHS/VHS) level

Signal	(A1) (A2)	• Ext. input • Color (colour) bar signal [NTSC]
Mode	(B1) (B2) (B3)	• EE • S-VHS SP • VHS SP
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• Y OUT terminal (75Ω terminated)
EVR mode EVR address	(F1) (F2) (F3) (F4)	• Jig code "57" • A : 11 • Jig code "21" • Jig code "18" or "19" (Channel +/-)
Specified value	(G)	• 1.00 ± 0.05 Vp-p
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Observe the Y OUT waveform at the measuring point (D).
(2) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.

(3) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(4) Transmit the code (F4) from the Jig RCU to adjust so that the Y level of the Y OUT waveform becomes the specified value (G).
(5) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)
(6) Record the signal (A2) in the mode (B2), and play back the recorded signal.
(7) Set the VCR to the manual tracking mode.
(8) Repeat steps (1) to (5) in the mode (B2).
(9) Record the signal (A2) in the mode (B3), and play back the recorded signal.
(10) Set the VCR to the manual tracking mode.
(11) Repeat steps (1) to (5) in the mode (B3).

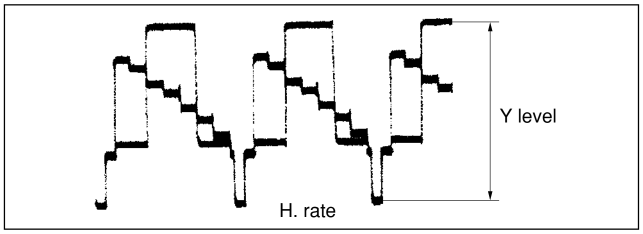


Fig. 3-3-2a EE/PB Y level

3.3.3 REC color (colour) level

Signal	(A1) (A2) (A3)	• Alignment tape(S-VHS, SP/EP, Color(colour) bar) [MH-1H] • Ext. input • Color (colour) bar signal [NTSC]
Mode	(B1) (B2)	• S-VHS SP • S-VHS EP
Equipment	(C)	• Oscilloscope
Measuring point	(D1) (D2)	• TP106 (PB. FM) • PB color (colour) output of the LPF
External trigger	(E)	• TP111 (D.FF)
EVR mode EVR address	(F1) (F2) (F3) (F4)	• Jig code “57” • A : 02 • Jig code “20” and “22” • Jig code “18” or “19” (Channel +/-)
Specified value	(G)	• SP: “B” x 125 ± 5% • EP: “B” x 125 ± 5%
Adjustment tool	(H1) (H2)	• Jig RCU [PTU94023B] • LPF [PTU93006] (See Fig. 3-3-3a.)

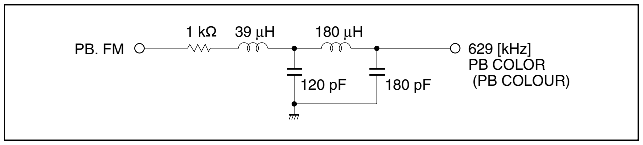


Fig. 3-3-3a LPF

(1) Connect the adjustment tool (H2) to the measuring point (D1).
(2) Apply the external trigger signal to D.FF (E) to observe the PB color (colour) waveform at the measuring point (D2).
(3) Play back the signal (A3) in the mode (B1) of the alignment tape (A1).
(4) Set the VCR to the manual tracking mode.
(5) Adjust tracking so that the PB color (colour) waveform becomes maximum. Make a note of the higher PB color (colour) level as “B” at this time.
(6) Record the signal (A3) in the mode (B1), and play back the recorded signal.
(7) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(8) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(9) Transmit the code (F4) from the Jig RCU to adjust so that the higher level channel becomes the specified value (G) of the note "B" level as shown in Fig. 3-3-3b. (Adjust before recording, then confirm it by playing back.)
(10) After adjustment, record the signal (A3) then playing it back again. At this time, confirm that there is no inverting phenomenon or noise appearing on the playback screen.
(11) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)
(12) Repeat steps (3) to (11) in the mode (B2).

Note:
- ***After adjusting, always perform the confirmation and re-adjustment of the item 3.4.1.***

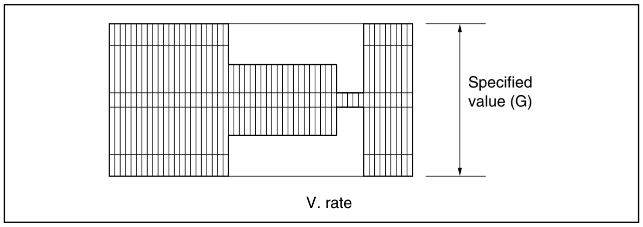


Fig. 3-3-3b REC color (colour) level

3.3.4 Video EQ (Frequency response)

Signal	(A1) (A2)	• Ext. S-input • Video sweep signal
Mode	(B1) (B2) (B3)	• S-VHS SP • S-VHS EP • Picture Control / Smart Picture REC : Normal / Natural PB : Edit / Distinct
Equipment	(C)	• Oscilloscope
Measuring point Frequency marker	(D1) (D2)	• Y OUT terminal (75Ω terminated) • 3 [MHz]
External trigger	(E)	• TP111 (D.FF)
EVR mode EVR address	(F1) (F2) (F3) (F4)	• Jig code “57” • A : 03 • Jig code “20” and “23” • Jig code “18” or “19” (Channel +/-)
Specified value	(G)	• SP: 2.8 ± 0.3 div. (–3 ± 1 dB) • EP: 2.8 ± 0.3 div. (–3 ± 1 dB)
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Apply the external trigger signal to D.FF (E) to observe the Y OUT waveform at the measuring point (D1).
(2) Record the signal (A2) in the mode (B1), and play back the recorded signal.
(3) Set the VCR to the manual tracking mode.
(4) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(5) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(6) Set the slope of the oscilloscope to the channel having higher (D2) marker level of the Y OUT waveform [signal (A2)]. Then set the 100 kHz marker level to the “4” scale on the oscilloscope. In this condition, transmit the code (F4) from the Jig RCU to adjust so that the (D2) marker level reaches the specified value (G).

(7) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)
(8) Repeat steps (2) to (7) in the mode (B2).

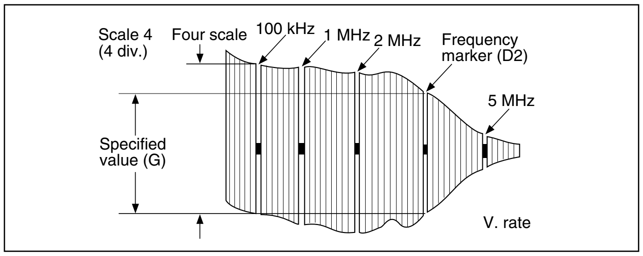


Fig. 3-3-4a Video EQ (Frequency Response)

3.3.5 Auto picture initial setting

Signal	(A1) (A2) (A3)	• Ext. input • Video: Optional • VHS tape
Mode	(B)	• EE → Auto adjust (SP/EP REC → PB)
Adjustment part	(F)	• Jig code “58”
Specified value	(G)	• STOP mode
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Insert the cassette tape (A3).
(2) Set the VCR to the Auto adjust mode by transmitting the code (F) from the Jig RCU. When the VCR enters the stop mode, the adjustment is completed. When the VCR enters the eject mode, repeat steps (1) to (2) again.

3.4 Audio circuit

Notes:

- ***This adjustment should be done after the “REC color (colour) level adjustment” for the video circuit has been completed.***
- ***GND (Ground) should be taken from the Tuner shield case.***

3.4.1 Audio REC FM

Signal	(A1) (A2) (A3)	• Ext. input • Audio: No signal • Video: Color (colour) bar signal [NTSC]
Mode	(B)	• S-VHS EP
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP2253 (A. PB. FM)
External trigger	(E)	• TP111 (D.FF)
EVR mode EVR address	(F1) (F2) (F3) (F4)	• Jig code “57” • A : 30 • Jig code “23” and “20” • Jig code “18” or “19” (Channel +/-)
Specified value	(G1) (G2)	• 500 ± 100 mVp-p • More than 350 mVp-p
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Apply the external trigger signal to D.FF (E) to observe the Audio PB FM waveform at the measuring point (D).
(2) Record the signal (A3) with no audio signal input in the mode (B), and play back the recorded signal.
(3) Set the VCR to the manual tracking mode.
(4) If the A.PB FM level is not within the specified value (G1), perform the adjustment in a following procedure.
(5) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(6) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(7) Transmit the code (F4) from the Jig RCU to adjust so that the A.PB FM level of the higher channel level becomes the specified value (G1). (Adjust before recording, then confirm it by playing back.)
(8) If the specified value (G1) is not obtained, transmit the code (F4) from the Jig RCU to adjust so that the waveform level of the lower channel level becomes the specified value (G2). (Adjust before recording, then confirm it by playing back.)
(9) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)

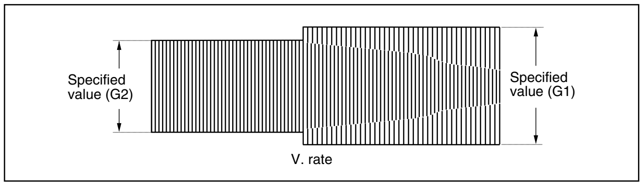


Fig. 3-4-1a Audio REC FM

3.5 Demodulator circuit

Notes:

- ***Unless otherwise specified in this demod circuit adjustments, all measuring points and adjustment parts are located on the Demod board.***
- ***Unless otherwise specified,set an audio multiplex TV signal generator as follows;***
  RF signal : 70 dBμ / 75Ω, color bar 87.5% modulation.

3.5.1 Input level

Signal	(A)	• RF signal (Audio: mono 300 Hz)
Mode	(B)	• Tuner • EE
Equipment	(C)	• Audio level meter
Measuring point	(D)	• IC1501 pin 26
EVR mode EVR address	(F1) (F2) (F3) (F4)	• Jig code “57” • A : 20 • Jig code “22” and “20” • Jig code “18” or “19” (Channel +/-)
Specified value	(G)	• 500 ± 10 mVrms
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Set an audio signal mode of the RF signal generator to mono 300 Hz.
(2) Connect the equipment (C) to the measuring point (D).
(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(5) Transmit the code (F4) from the Jig RCU to adjust so that the level of the measuring point (D) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)

3.5.2 Stereo VCO

Signal	(A)	• No signal
Mode	(B)	• Tuner • EE
Equipment	(C)	• Frequency counter
Measuring point	(D1)	• IC1501 pin 26
Short point	(D2)	• C1505(–) terminal
EVR mode	(F1)	• Jig code “57”
EVR address	(F2)	• A : 21
	(F3)	• Jig code “22” and “21”
	(F4)	• Jig code “18” or “19” (Channel +/-)
Specified value	(G)	• 15.73 ± 0.1 kHz
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Connect the short wire between the short point (D2) and the GND (Ground).
(2) Connect the equipment (C) to the measuring point (D1).
(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(5) Transmit the code (F4) from the Jig RCU to adjust so that the frequency of the measuring point (D1) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)
(7) Disconnect the short wire between the short point (D2) and the GND (Ground).

3.5.3 Stereo filter

Signal	(A)	• RF signal (Audio: No signal)
Mode	(B)	• Tuner • EE
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• IC1501 pin 26
EVR mode	(F1)	• Jig code “57”
EVR address	(F2)	• A : 22
	(F3)	• Jig code “22” twice
	(F4)	• Jig code “18” or “19” (Channel +/-)
Specified value	(G)	• Minimum level
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Set an audio signal mode of the RF signal generator to no signal.
(2) Connect the equipment (C) to the measuring point (D).
(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(5) Transmit the code (F4) from the Jig RCU to adjust so that the level of the measuring point (D) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)

3.5.4 Separation - 1

Signal	(A)	• RF signal (Audio: L-ch 300 Hz 14% modulated)
Mode	(B)	• Tuner • EE
Equipment	(C)	• Audio level meter
Measuring point	(D)	• IC1501 pin 26
EVR mode	(F1)	• Jig code “57”
EVR address	(F2)	• A : 23
	(F3)	• Jig code “22” and “23”
	(F4)	• Jig code “18” or “19” (Channel +/-)
Specified value	(G)	• Minimum level
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Set an audio signal mode of the RF signal generator to alternate L-ch 300 Hz 14% modulated.
(2) Connect the equipment (C) to the measuring point (D).
(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(5) Transmit the code (F4) from the Jig RCU to adjust so that the level of the measuring point (D) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)

3.5.5 Separation - 2

Signal	(A)	• RF signal (Audio: L-ch 5 kHz 14% modulated)
Mode	(B)	• Tuner • EE
Equipment	(C)	• Audio level meter
Measuring point	(D)	• IC1501 pin 26
EVR mode	(F1)	• Jig code “57”
EVR address	(F2)	• A : 24
	(F3)	• Jig code “22” and “24”
	(F4)	• Jig code “18” or “19” (Channel +/-)
Specified value	(G)	• Minimum level
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Set an audio signal mode of the RF signal generator to alternate L-ch 5 kHz 14% modulated.
(2) Connect the equipment (C) to the measuring point (D).
(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(5) Transmit the code (F4) from the Jig RCU to adjust so that the level of the measuring point(D) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)

3.5.6 SAP VCO

Signal	(A)	• No. signal
Mode	(B)	• Tuner • EE
Equipment	(C)	• Frequency counter
Measuring point	(D1)	• IC1501 pin 26
Short point	(D2)	• C1505 (–) terminal
EVR mode EVR address	(F1) (F2) (F3) (F4)	• Jig code “57” • A : 25 • Jig code “22” and “25” • Jig code “18” or “19” (Channel +/-)
Specified value	(G)	• 78.67 ± 0.5 kHz
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Connect the short wire between the short point (D2) and the GND (Ground).
(2) Connect the equipment (C) to the measuring point (D1).
(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(5) Transmit the code (F4) from the Jig RCU to adjust so that the frequency of the measuring point (D1) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)
(7) Disconnect the short wire between the short point (D2) and the GND (Ground).

SECTION 4
CHARTS AND DIAGRAMS

NOTES OF SCHEMATIC DIAGRAM

Safety precautions
The Components identified by the symbol ⚠ are critical for safety. For continued safety, replace safety critical components only with manufacturer's recommended parts.

1. Units of components on the schematic diagram

Unless otherwise specified.

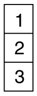
1) All resistance values are in ohm, 1/6 W, 1/8 W (refer to parts list).
   Chip resistors are 1/16 W.
   K or k: kΩ (1000Ω), M: MΩ (1000kΩ)
2) All capacitance values are in μF, (P: PF).
3) All inductance values are in μH, (m: mH).
4) All diodes are 1SS133, MA165 or 1N4148M (refer to parts list).

2. Indications of control voltage

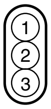
AUX : Active at high

$\overline{\text{AUX}}$ or AUX(L) : Active at low

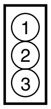
3. Interpreting Connector indications



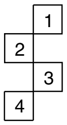
Removable connector



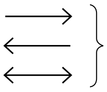
Wire soldered directly on board



Non-removable Board connector



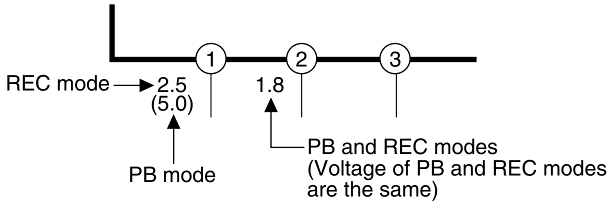
Board to Board



Connected pattern on board
The arrows indicate signal path

4. Voltage measurement

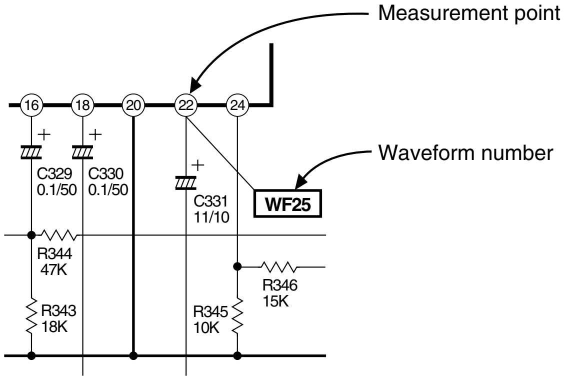
1) Video circuits
   REC : Colour bar signal in SP mode, normal VHS mode
   PB : Alignment tape, colour bar SP mode, normal VHS mode
   — : Unmeasurable or unnecessary to measure
2) Audio circuits
   REC : 1KHz, –8 dBs sine wave signal in SP mode, Normal VHS mode
   PB : REC then playback it
3) Movie Camera circuits
   Measured using a correctly illuminated gray scale or colour bar test charts in the E-E mode
4) Indication on schematic diagram
   Voltage Indications for REC and PB mode on the schematic diagram are as shown below.



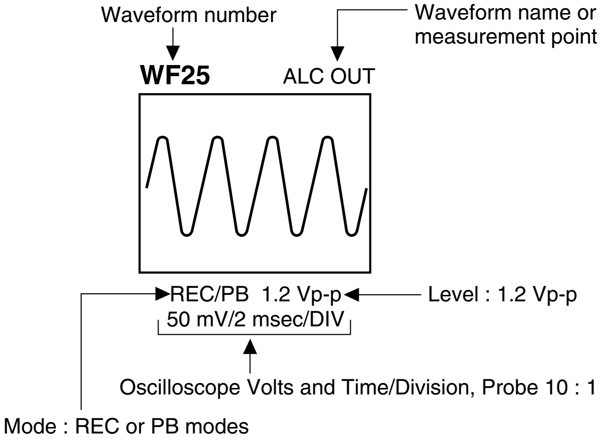
Note: If the voltages are not indicated on the schematic diagram, refer to the voltage charts.

5. Waveform measurement

1) Video circuits
   REC : Colour bar signal in SP mode, normal VHS mode
   PB : Alignment tape, colour bar SP mode, normal VHS mode
2) Audio circuits
   REC : 1KHz, –8 dBs sine wave signal in SP mode, normal VHS mode
   PB : REC then playback it
3) Movie Camera circuits
   Measured using a correctly illuminated gray scale or colour bar test chatrs in the E-E mode
4) Indication on schematic diagram
   Waveform indications on the schematic diagram are as shown below.

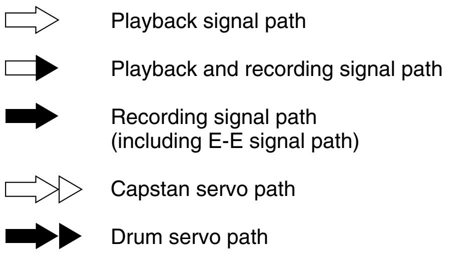


5) Waveform indications

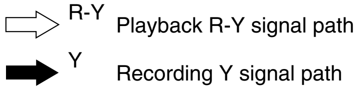


6. Signal path Symbols

The arrows indicate the signal path as follows.

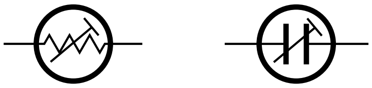


(Example)



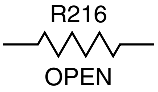
7. Indication of the parts for adjustments

The parts for the adjustments are surrounded with the circle as shown below.



8. Indication of the parts not mounted on the circuit board

"OPEN" is indicated by the parts not mounted on the circuit board.



CIRCUIT BOARD NOTES

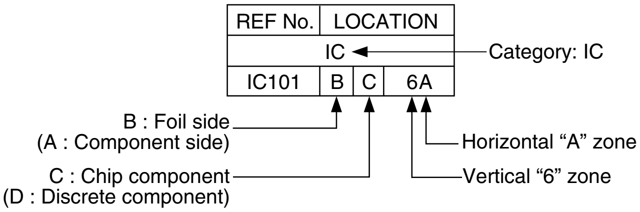
1. Foil and Component sides

1) Foil side (B side) :
Parts on the foil side seen from foil face (pattern face) are indicated.

2) Component side (A side) :
Parts on the component side seen from component face (parts face) indicated.

2. Parts location guides

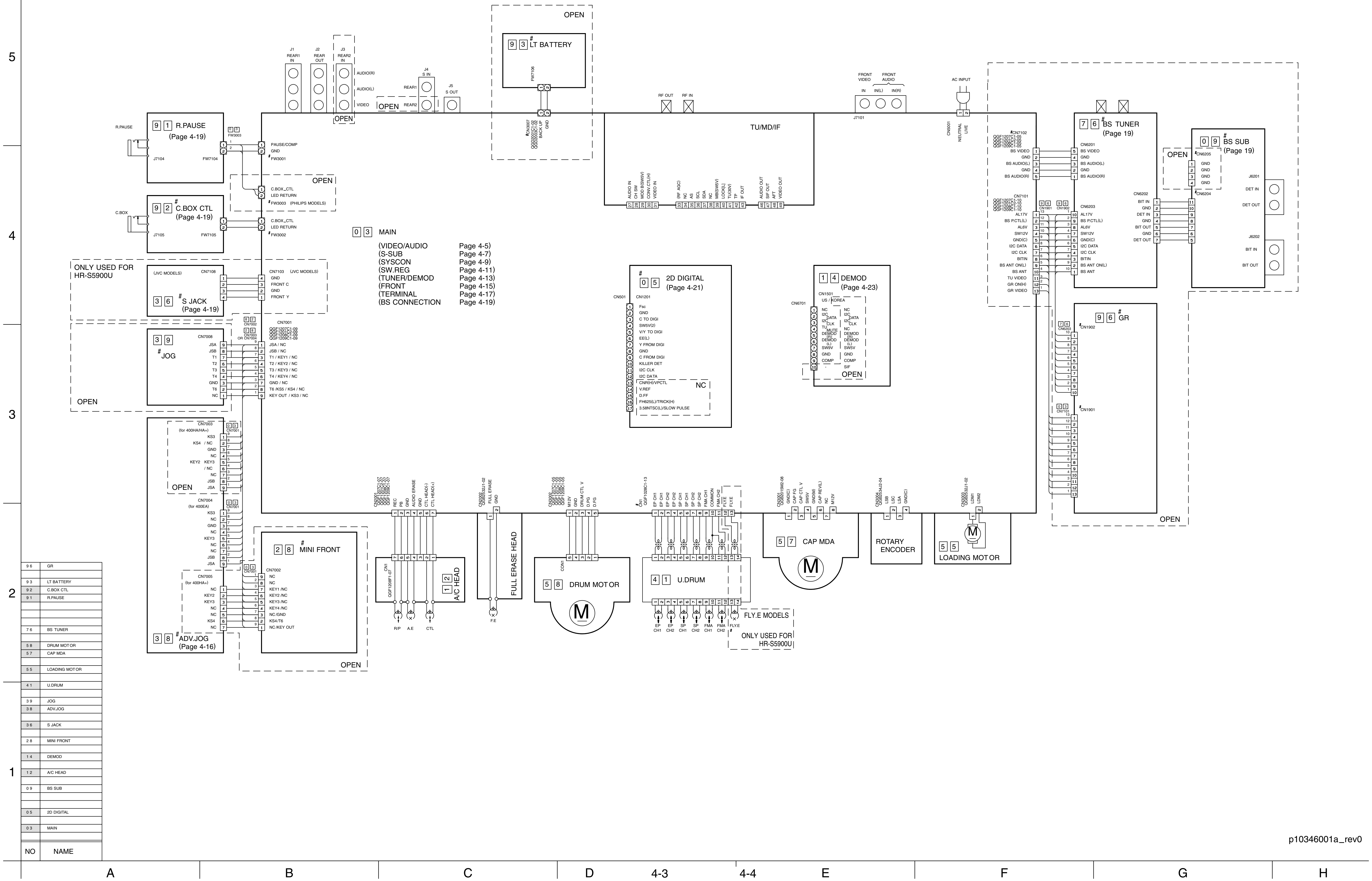
Parts location are indicated by guide scale on the circuit board.



Note:

For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION Edition 4 No. 82054D (January 1994).

4.1 BOARD INTERCONNECTIONS

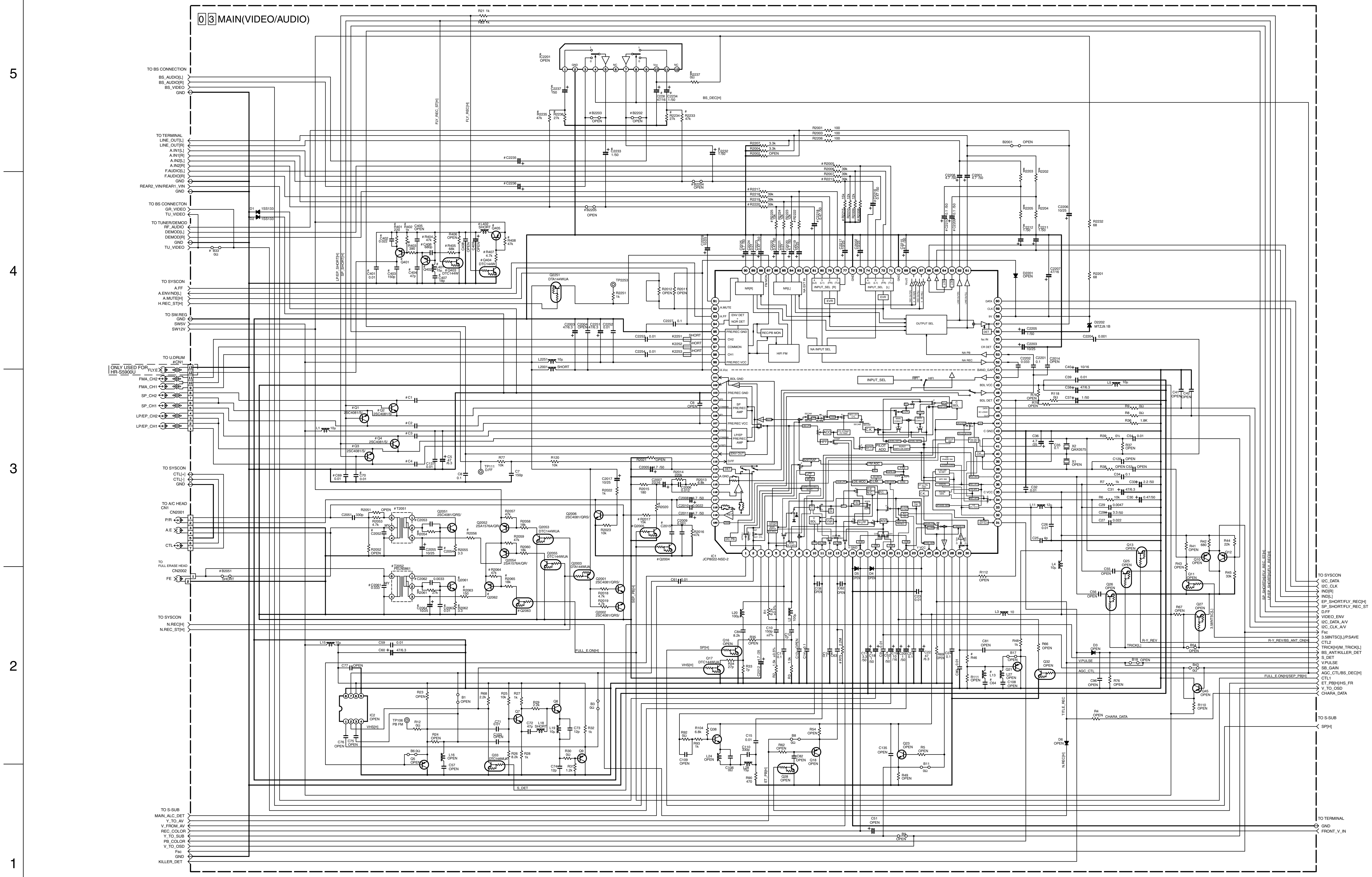


NO	NAME
9 6	GR
9 3	LT BATTERY
9 2	C.BOX CTL
9 1	R.PAUSE
7 6	BS TUNER
5 8	DRUM MOTOR
5 7	CAP MDA
5 5	LOADING MOTOR
4 1	U.DRUM
3 9	JOG
3 8	ADV.JOG
3 6	S JACK
2 8	MINI FRONT
1 4	DEMOD
1 2	A/C HEAD
0 9	BS SUB
0 5	2D DIGITAL
0 3	MAIN

p10346001a_rev0

4.2 MAIN (VIDEO/AUDIO) SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



# DIFFERENCE TABLE

MODEL		Q401-Q405 C401-C409 R401-R409 L401,L402	CN1	Q1-Q4 C69,C70	C1-C4
FLYING ERASE	YES	○	1-13 PIN	X	0.01
	NO	X	1-11 PIN	○	1

MODEL		C52	R2212,R2214 R2216,R2221
BS TUNER	YES	○	○
	NO	X	X

MODEL		C18	R2213,R2215,C2216 R2220,R2215,C2218
BS DECORDER OR L2_IN	YES	○	○
	NO	X	X

MODEL		R2202,R2203,R2204,R2205 C2203,C2210,C2211,C2212
L.IND	YES	○
	NO	X

MODEL		B33
GR TUNER	YES	X
	NO	○

MODEL	R75	C63
2D	X	0.1
3D	○	0.047

MODEL		R46	L13	C64
PB COL TRAP	2D(JVC)	470	100µ	12p
	2D(PCEC)	390	68µ	20p
	3D	270	100µ	12p

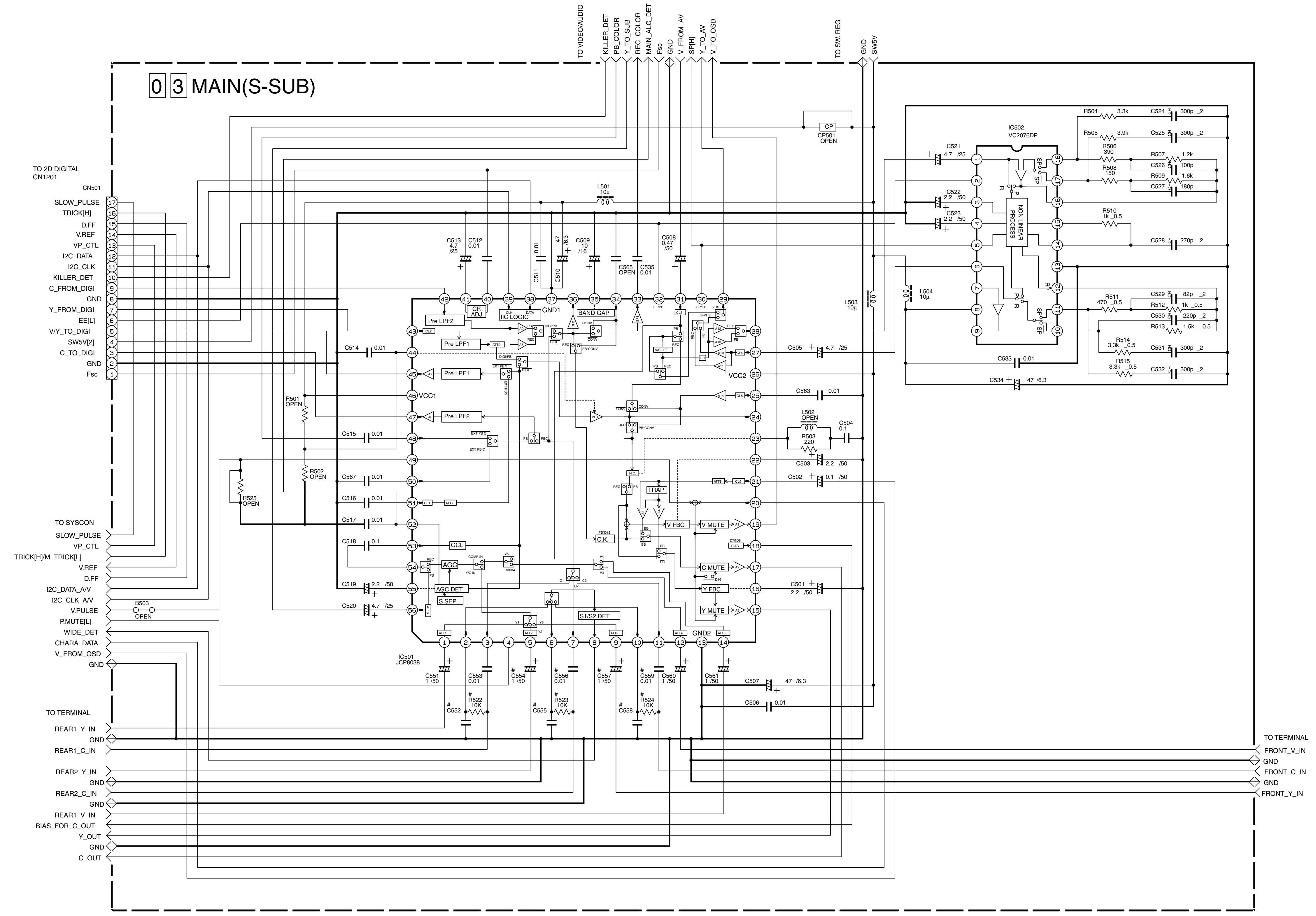
MODEL		T2052,Q2061,Q2062,Q2063 R2061,R2062,R2063,R2064,R2065 C2061,C2062,C2063,C2064	T2051	R2054	R2056	C2052	C2053	C2054
A.DUB	YES	○	PELN0860	15k	100	0.033	0.0033	0.01
	NO	X	PELN0832	12k	82	0.082	0.0047	0.022

NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN µF.
ALL NPN TYPE TRANSISTORS ARE 2SC4081/QRS/
ALL PNP TYPE TRANSISTORS ARE 2SA1576A/QR/
ELECTROLYTIC
CERAMIC
MY MYLER
N NON POLAR

p10351001a_rev0

4.3 MAIN (S-SUB) SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



# DIFFERENCE TABLE

MODEL \ SYMBOL	R523 C554 C555 C556	R522 R524 C552 C558	C557 C559	C555	C552 C558
S-VHS JPN F_S_IN REAR2_IN	○	○	○	0.01	0.01
S-VHS JPN F_S_IN	X	○	○	0Ω	0.01
S-VHS US F_S_IN	X	X	○	0Ω	0Ω
S-VHS US	X	X	X	0Ω	0Ω

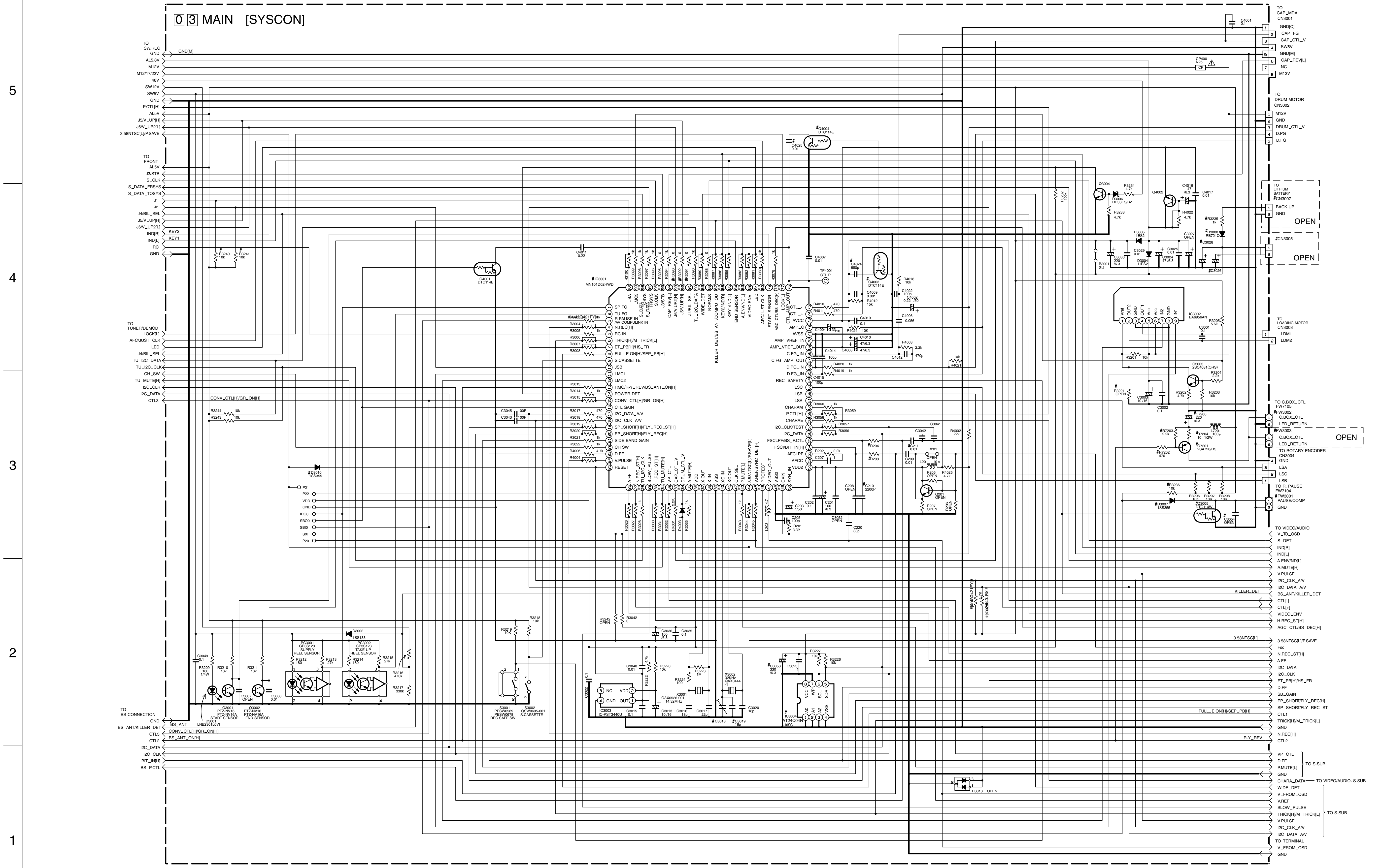
NOTES: UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.
ALL NPN TYPE TRANSISTORS ARE 2SC4081/QRS/
ALL PNP TYPE TRANSISTORS ARE 2SA1576A/QR/

ELECTROLYTIC
CERAMIC
MY MYLER
N NON POLAR

p20210001a_rev0

4.4 MAIN (SYSCON) SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



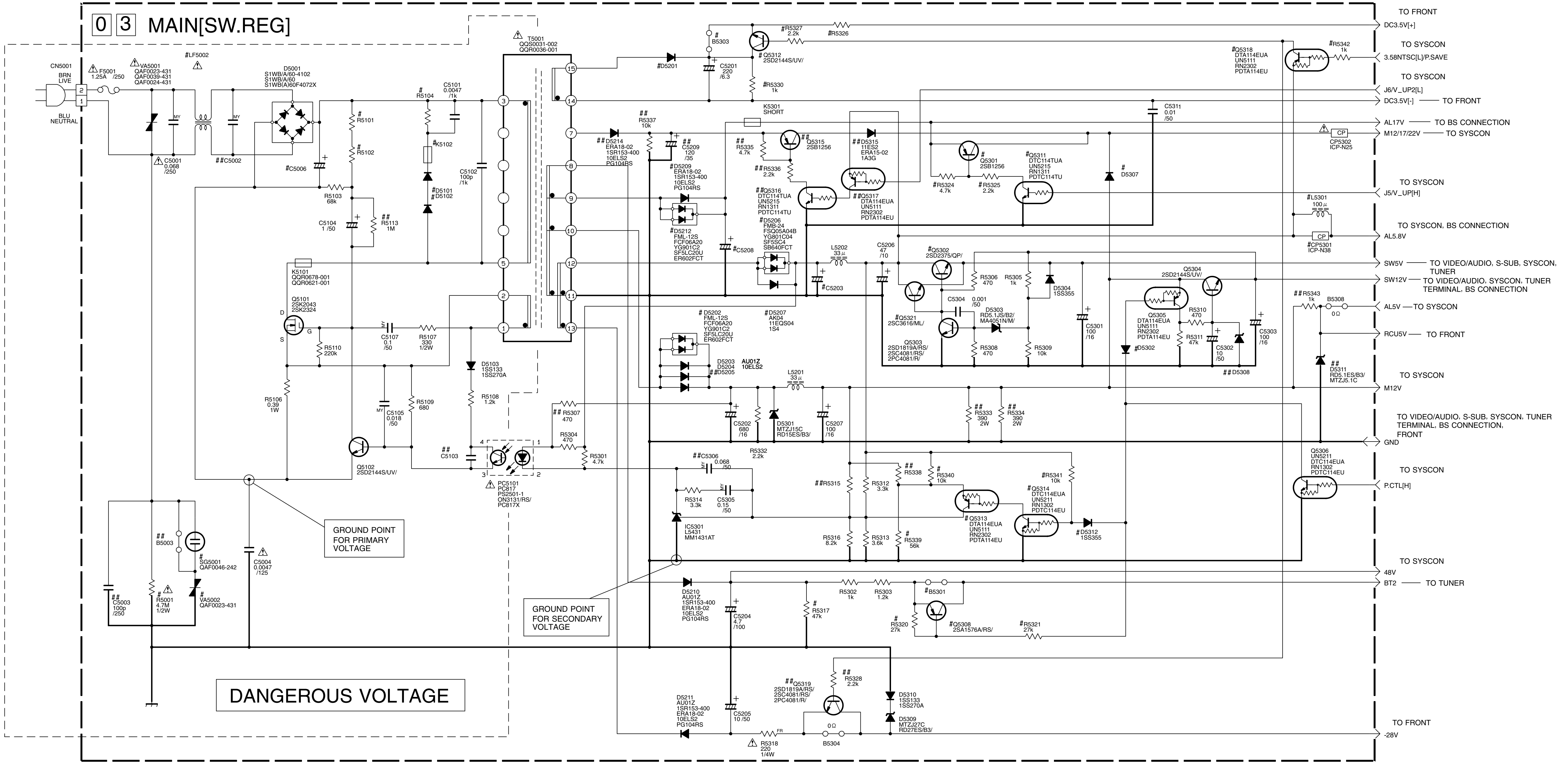
NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.

- ELECTROLYTIC
- CERAMIC
- MYLER
- NON POLAR

p10347001a_rev0

4.5 MAIN (SW.REG) SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



##MARK ELEMENT ARE NOT MOUNTED

#DIFFERENCE TABLE 1

	C5006	C5203	L5301	CP5301	D5206	D5207	R5001	Q5302	Q5321
D1	82/200	680/10	SHORT	NO	NO	YES	NO	NO	YES
D5	150/200	1200/10	NO	YES	YES	NO	NO	YES	NO
S1	150/200	1200/10	YES	NO	YES	NO	NO	YES	NO
S1U	150/200	1200/10	YES	NO	YES	NO	YES	YES	NO
S5	150/200	Oct-00	NO	YES	YES	NO	NO	YES	NO

#DIFFERENCE TABLE 2

HIGH SPEED FF/REW	C5208	D5209	D5212	D5307	D5314 Q5301 Q5311 R5324 R5325
DOM(W/O BS)	180/25	YES	NO	1.10E+03 ERA15-02 1A3G	YES
DOM(WITH BS)	330/25	NO	YES	1.10E+03 ERA15-02 1A3G	YES
OTHER	NO	NO	NO	SHORT	NO

#DIFFERENCE TABLE 3

POWER SAVE	R5104	B5301 B5303	D5312 Q5318 R5330 Q5308 R5317 R5339 Q5312 R5320 R5340 Q5313 R5321 R5341 Q5314 R5327 R5342	R5101 R5102	D5302
DOM	150k 2W	NO	YES	330k	1SS355
OTHER	68k 2W	YES	NO	220k	SHORT

#DIFFERENCE TABLE 4

LEVEL IND.		D5201	R5326
-NO-	DOM	AK04 11EQS04 1S4	3.9
	OTHER	AU01Z 10ELS2	0
-YES-		AK04 11EQS04 1S4	1

SURGE	VA5002 SG5001
PH	YES
OTHER	NO

#DIFFERENCE TABLE 6

	K5102	D5101 D5102
DOM	QQR0678-001 QQR0621-001	AU01 10ELS4
OTHER	SHORT	AU01 10ELS4 1SR153-400 ERA18-04

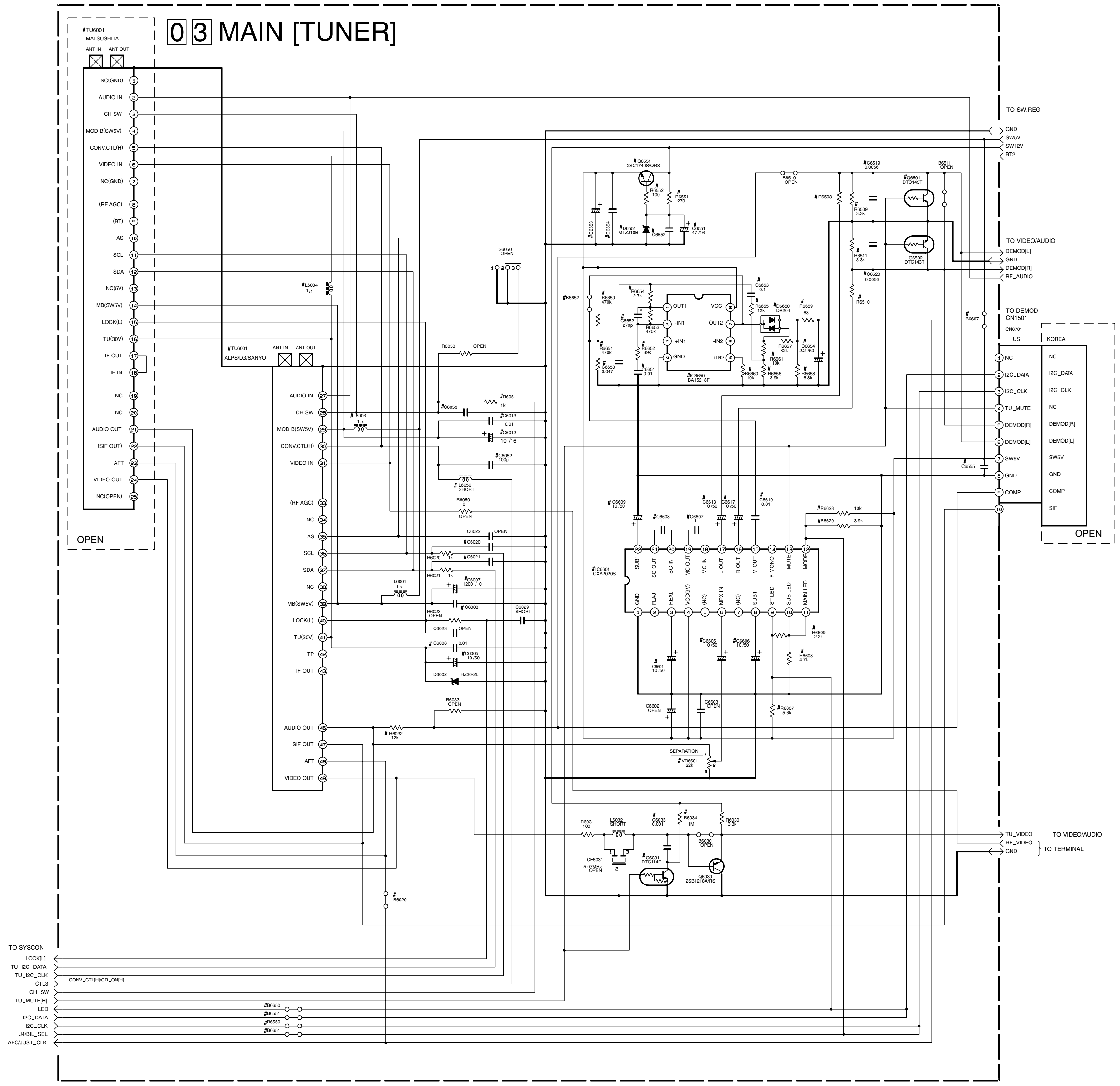
#DIFFERENCE TABLE 7

	LF5002
SVHS WITH BS	QQR0908-001 QQR0984-001
OTHER	QQR0532-001 QQR0533-001 QQR0516-001 QQR0816-001 QQR0932-001

p20184001a_rev1

4.6 MAIN (TUNER/DEMOD) SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



DIFFERENCE TABLE

		JPN	US	KR
TUNER				
AFC	B6020	×	○	○
MUTE	Q6031,R6034,C6033	×	×	×
RF CONV	L6003,L6050, R6050,R6051	×	○	○
US AUDIO	R6032	×	○	×
5V	C6007	○	×	×
	C6005,C6008,C6012, C6013,C6020,C6021, C6052,C6053	×	×	×
DEMOD				
UNIT	CN6701	×	US	KR
MUTE	Q6501,Q6502	×	×	×
REG	Q6551,D6551, R6551,R6552	○	○	×
I2C	B6550,B6551	×	○	○
AUDIO OUT	R6508,R6510	12k	0	0
	R6509,R6511, C6519,C6520	○	×	×
JPN	IC6601,IC6650, D6650,VR6601, R6607-R6609, R6628,R6629, R6650-R6661,C6601, C6605-C6609,C6613, C6617,C6619, C6650-C6654 B6650,B6651	○	×	×
KR	B6607	×	×	○

NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.
ELECTROLYTIC
CERAMIC
MY MYLER
N NON POLAR

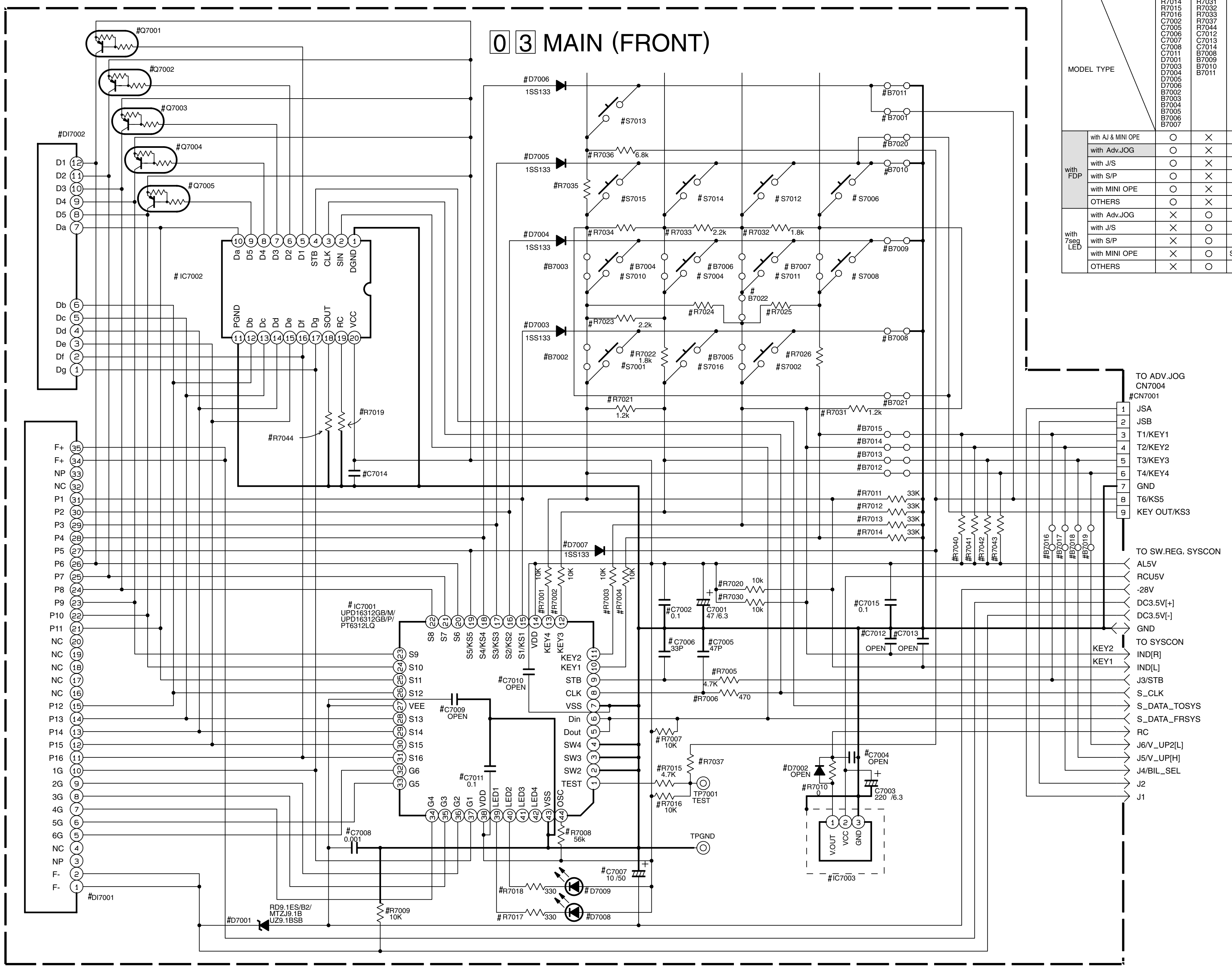
p10345001a_rev1

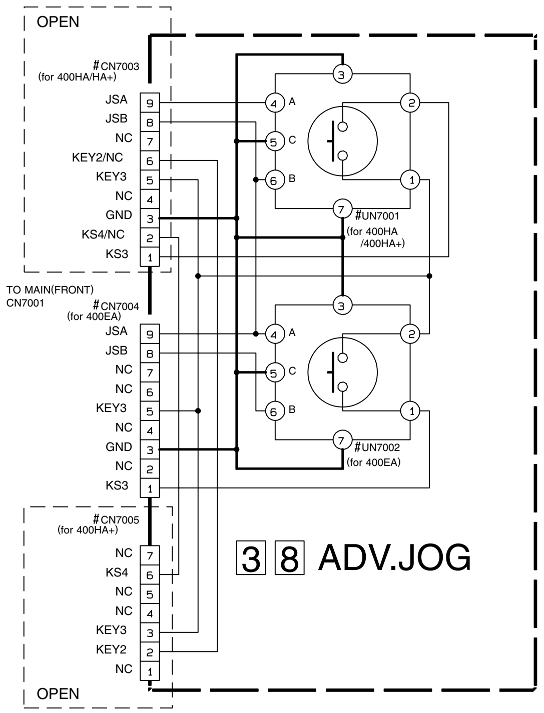
4.7 MAIN (FRONT) AND ADV.JOG SCHEMATIC DIAGRAMS

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only.
When replacing the parts, refer to the Parts List.

MODEL TYPE	SYMBOL	DI7001 IC7001 R7001 R7002 R7003 R7004 R7005 R7006 R7007 R7008 R7009 R7011 R7012 R7013 R7014 R7015 R7016 C7002 C7005 C7006 C7007 C7008 C7011 D7001 D7003 D7004 D7005 D7006 B7002 B7003 B7004 B7005 B7006 B7007	DI7002 IC7002 Q7001 Q7002 Q7003 Q7004 Q7005 R7019 R7020 R7021 R7023 R7024 R7025 R7030 R7031 R7032 R7033 R7037 R7044 C7012 C7013 C7014 B7008 B7009 B7010 B7011	R7034	R7036	D7007	R7022 R7026	R7035	B7012 B7015	B7013	B7014	B7016 B7017 B7018 B7019	B7001	B7020	B7021	CN7001
with FDP	with AJ & MINI OPE	○	×	×	×	×	SHORT	SHORT	×	○	○	×	○	○	×	○
	with Adv.JOG	○	×	×	×	×	SHORT	SHORT	×	○	×	×	×	○	×	○
	with J/S	○	×	×	×	○	SHORT	SHORT	○	○	○	×	×	×	×	○
	with S/P	○	×	×	×	○	SHORT	SHORT	○	○	○	×	×	○	×	○
	with MINI OPE	○	×	×	×	×	SHORT	SHORT	○	○	○	×	○	×	×	○
	OTHERS	○	×	×	×	×	SHORT	SHORT	×	×	×	×	×	×	×	×
with 7seg LED	with Adv.JOG	×	○	○	○	×	○	4.7k	×	×	×	×	×	×	×	○
	with J/S	×	○	○	○	×	○	4.7k	×	×	×	○	×	×	×	○
	with S/P	×	○	○	○	×	○	4.7k	×	×	×	○	×	×	×	○
	with MINI OPE	×	○	SHORT	×	×	○	×	×	×	×	×	×	×	○	○
	OTHERS	×	○	○	○	×	○	4.7k	×	×	×	×	×	×	×	×

0 3 CN7001 PIN No.	3 8 CN7003 CN7004 PIN No.	FDP						LED				
		AJ+	Adv.JOG	J/S	S/Play	MINI OPE	OTHERS	Adv.JOG	J/S	S/Play	MINI OPE	OTHERS
1	9	JSA	JSA	JSA	NC	NC	NC	JSA	JSA	NC	NC	NC
2	8	JSB	JSB	JSB	NC	NC	NC	JSB	JSB	NC	NC	NC
3	7	NC	NC	T1	T1	KEY1	NC	NC	T1	T1	NC	NC
4	6	KEY2	NC	T2	T2	KEY2	NC	NC	T2	T2	NC	NC
5	5	KEY3	KEY3	T3	T3	KEY3	NC	NC	T3	T3	NC	NC
6	4	NC	NC	T4	T4	KEY4	NC	NC	T4	T4	NC	NC
7	3	GND	GND	GND	GND	NC	NC	GND	GND	GND	GND	NC
8	2	KS4	NC	KS5	KS5	KS4	NC	T6	NC	T6	T6	NC
9	1	KS3	KS3	NC	KS3	NC	NC	NC	NC	NC	KEY OUT	NC





LED \ SYMBOL	R7017 D7008	R7018 D7009
for S7002	○	×
for S7016	×	○

RCU	R7010	C7004 D7002	IC7003
JVC	SHORT	×	GP1U291Q PNA4652MOOYC PIC-28143LJ
PHILIPS	SHORT	×	GP1U290Q PNA4655MOOYC PIC-28142LJ

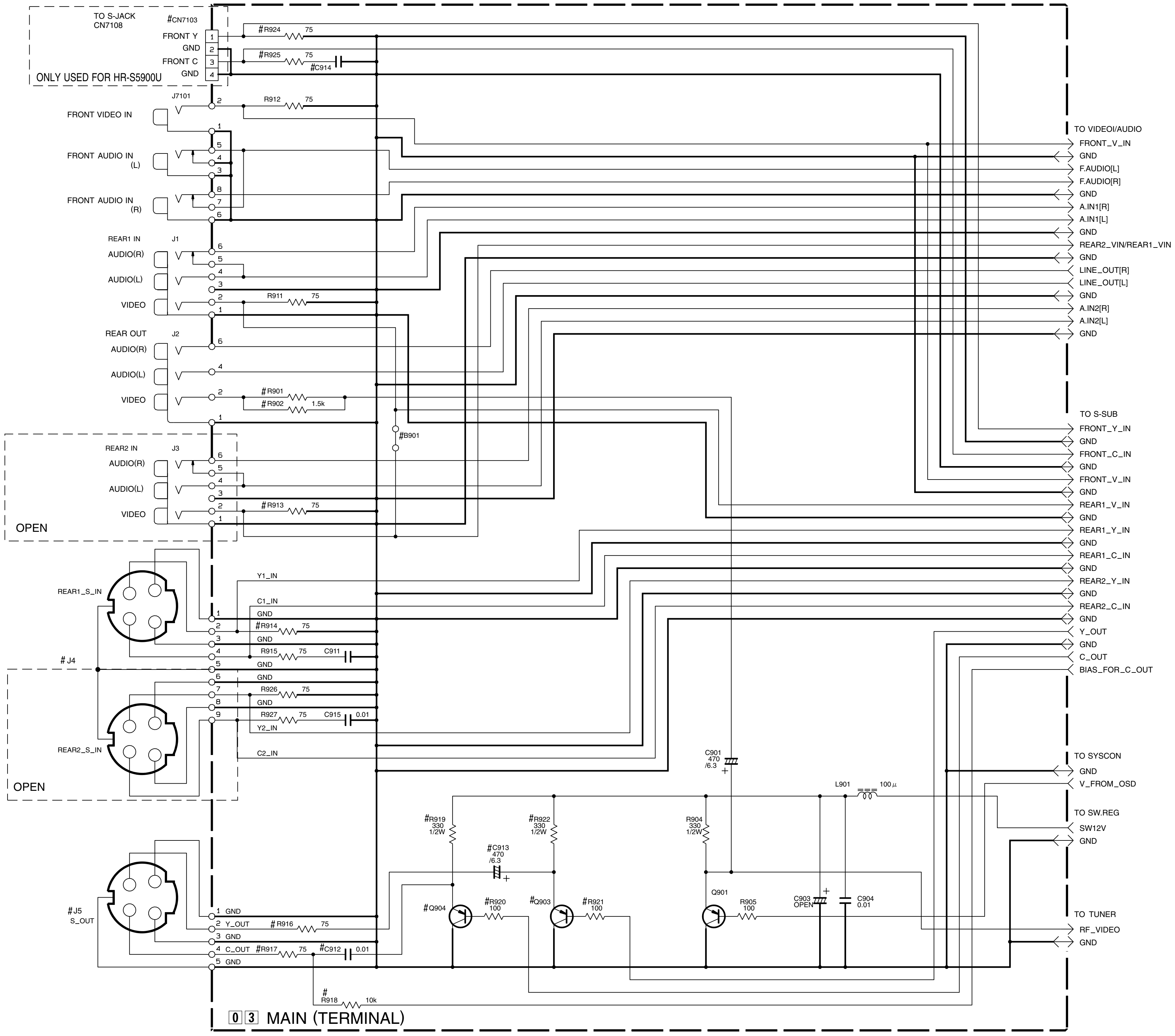
NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.

+‖	ELECTROLYTIC
‖	CERAMIC
‖ MY	MYLER
‖ N	NON POLAR

p20204001a_rev0.1

4.8 MAIN (TERMINAL) SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



# DIFFERENCE TABLE

○ : Used
× : Not used

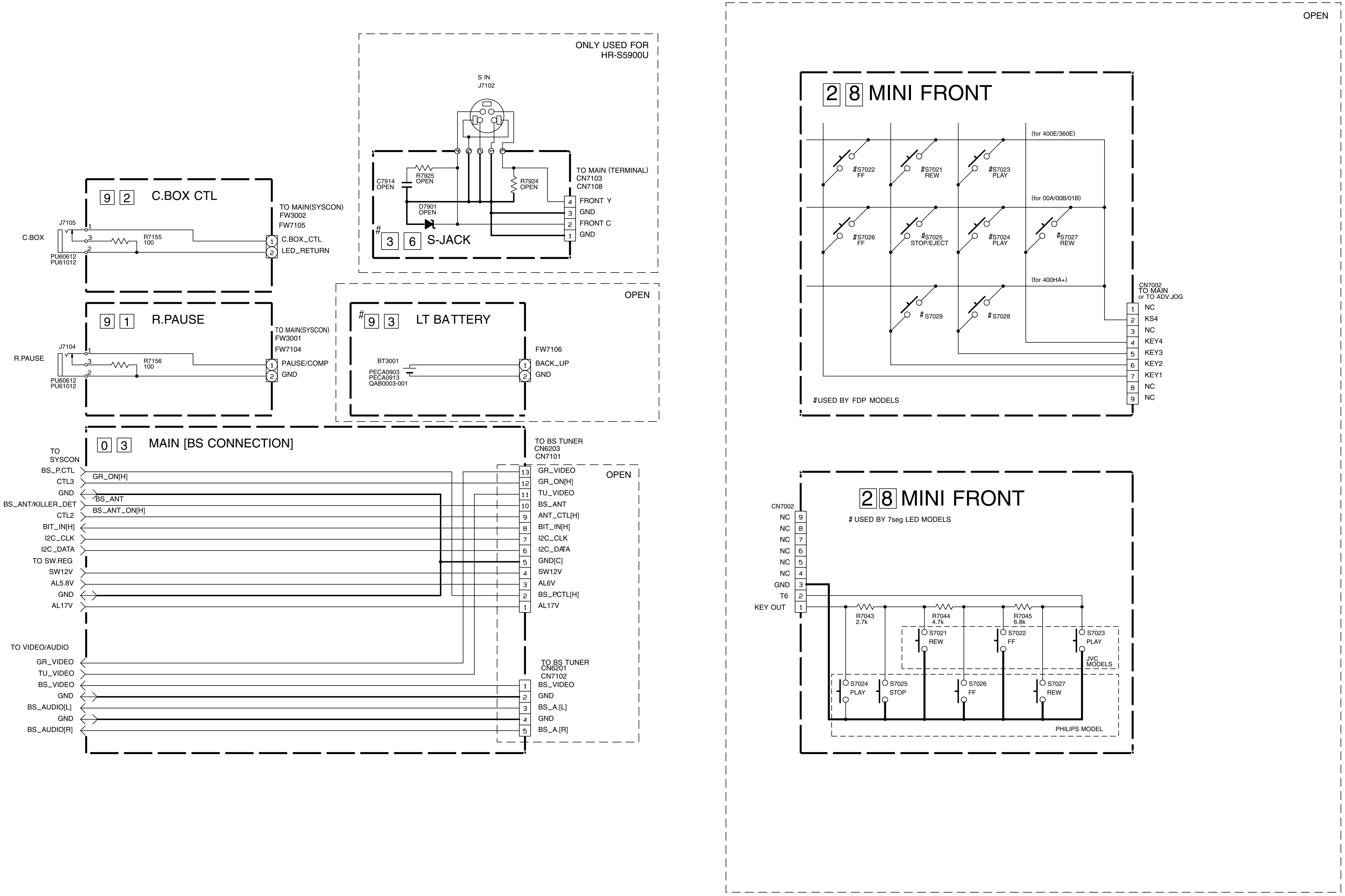
SYMBOL / MODEL	R913 J3	J4	R924 R925 CN7103	C914	R926 R927 C915	R918	C911	R902 R914-R917 R919-R922 Q903,Q904 C912,C913 J5	B901	R901
S-VHS JPN F_S_IN REAR2_IN	○	S1/S2	○	0.01	○	○	0.01	○	X	82
S-VHS JPN F_S_IN	X	S1	○	0.01	X	○	0.01	○	X	82
S-VHS US F_S_IN	X	S1	○	0Ω	X	X	0Ω	○	X	82
S-VHS US	X	S1	X	X	X	X	0Ω	○	X	82
VHS	X	X	X	X	X	X	X	X	○	75

NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN µF.
ALL NPN TYPE TRANSISTORS ARE 2SC4081/QRS/
ALL PNP TYPE TRANSISTORS ARE 2SA1576A/QR/

ELECTROLYTIC
CERAMIC
MYLER
NON POLAR

4.9 MAIN (BS CONNECTION), S-JACK, R.PAUSE AND C.BOX CTL SCHEMATIC DIAGRAMS

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



0 3

	BS MODELS	GR MODELS
CN7101	1-10	1-13

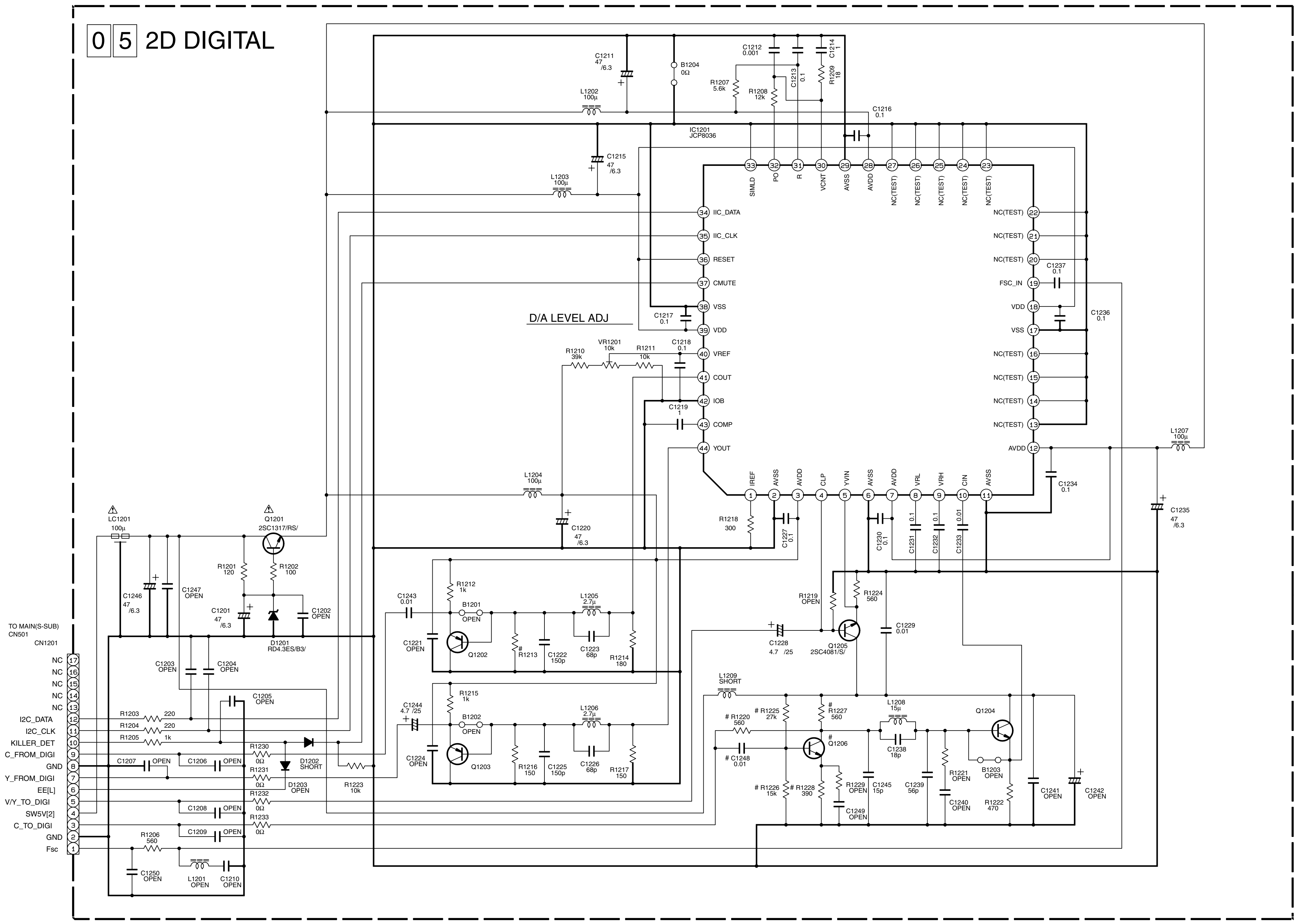
NOTES: UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.

ELECTROLYTIC
CERAMIC
MYLER
NON POLAR

p20205001a_rev0

4.10 2D DIGITAL SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



# DIFFERENCE TABLE

MODEL \ SYMBOL	Q1206 R1225-R1228 C1248	R1220	R1213
PCEC	○	X	150
OTHER	X	○	180

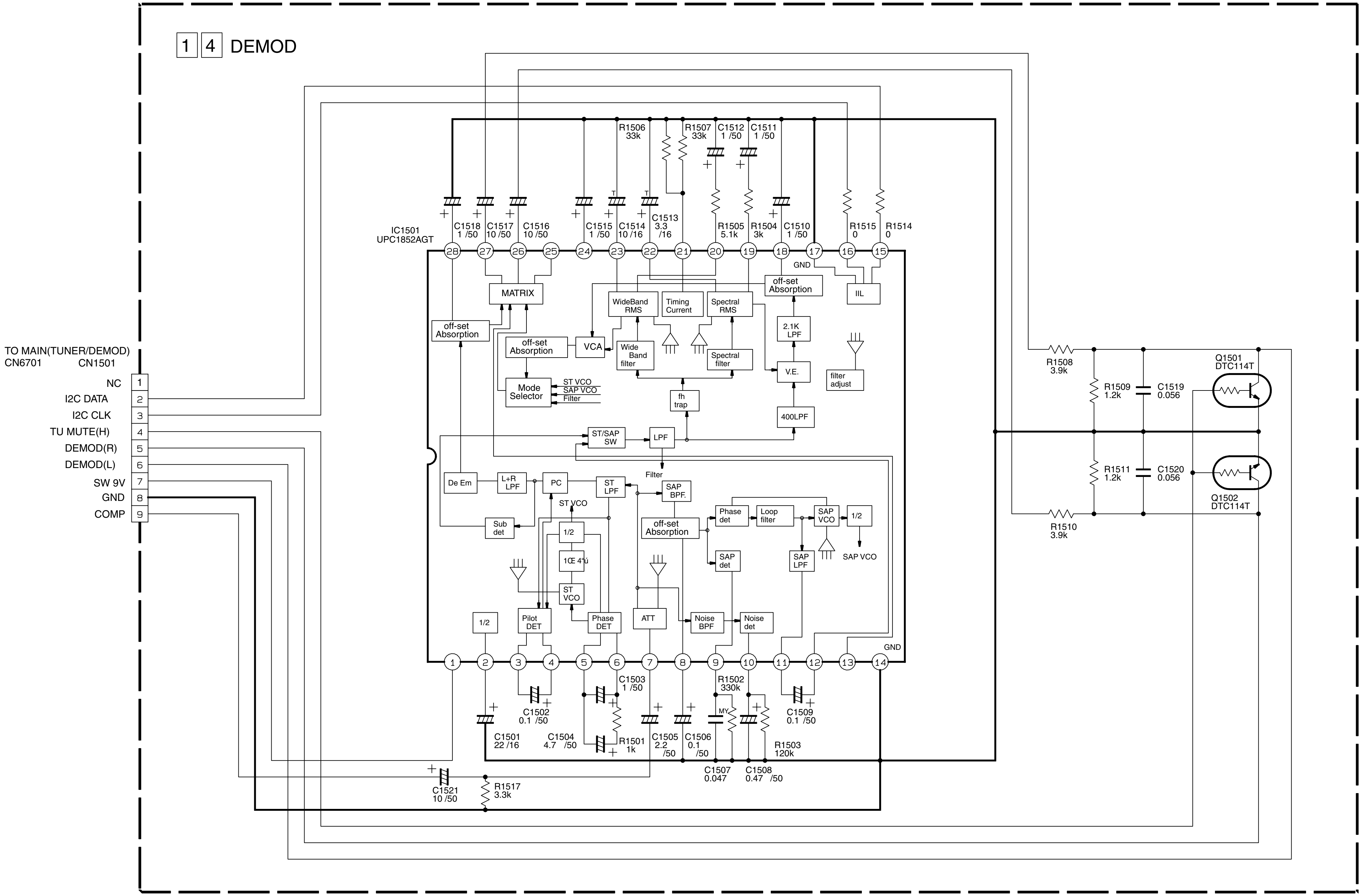
NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN µF.
ALL NPN TYPE TRANSISTORS ARE 2SC4081/QRS/.
ALL PNP TYPE TRANSISTORS ARE 2SA1576A/QR/.

ELECTROLYTIC
CERAMIC
MYLER
NON POLAR

p20211001a_rev0

4.11 DEMODULATOR SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.
ELECTROLYTIC
CERAMIC
TANTAL

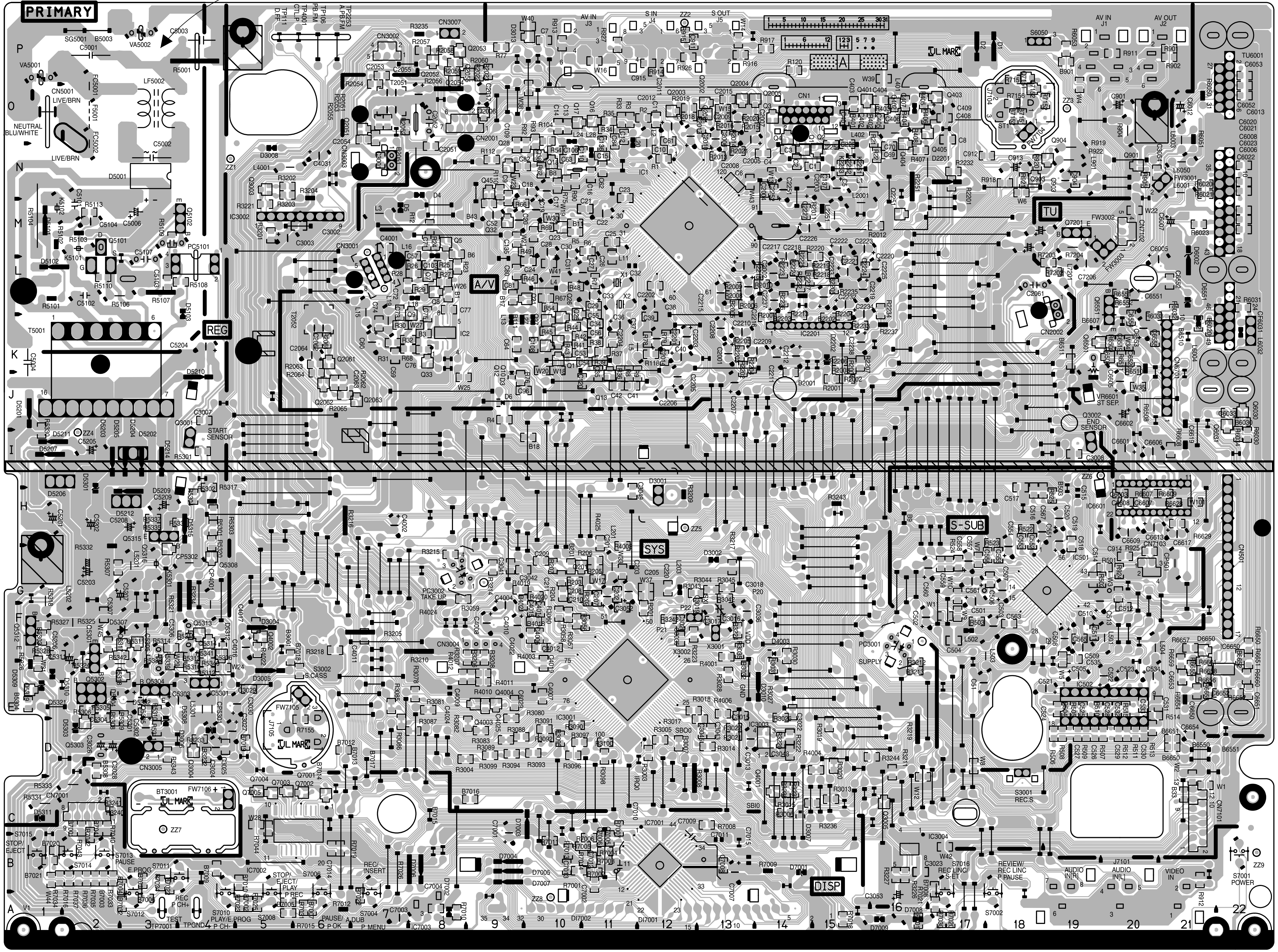
p97596_rev0

4.12 MAIN, R.PAUSE AND C.BOX CTL CIRCUIT BOARDS

<03>MAIN,<91>R.PAUSE,<92>C.BOX CTL
LPB10134-001E

DANGEROUS VOLTAGE

CAUTION :
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE AND RATED FUSE(S).
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE CP(S) MANUFACTURED BY ROHM.
ATTENTION :
REPLACER PAR DES FUSIBLE DE MEME TYPE.

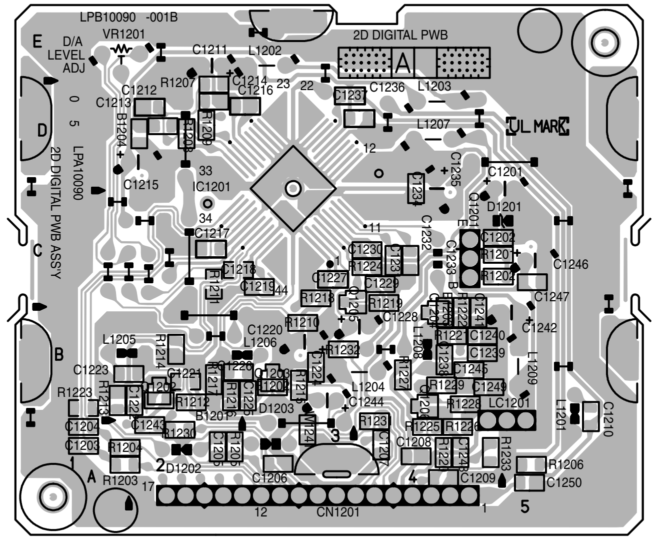


COMPONENT PARTS LOCATION GUIDE
＜MAIN, R.PAUSE AND C.BOX CTL ＞

REF.NO.	LOCATION		
CAPACITOR			
C1	B	C	15N
C2	B	C	14N
C3	B	C	14N
C4	B	C	14N
C5	A	D	15N
C6	B	C	13N
C7	B	C	10P
C8	B	C	17O
C9	B	C	9N
C10	B	C	12N
C11	B	C	12O
C12	B	C	11O
C13	B	C	10O
C14	B	C	10O
C15	B	C	11N
C16	B	C	11N
C17	A	D	10N
C18	A	D	10N
C19	A	D	10M
C20	A	D	9M
C21	B	C	11M
C22	A	D	11M
C23	B	C	11N
C24	B	C	10L
C25	B	C	11M
C26	B	C	11M
C27	B	C	11L
C28	A	D	10M
C29	B	C	11L
C30	A	D	10M
C31	A	D	11L
C32	A	D	11L
C33	A	D	11L
C34	B	C	11K
C35	B	C	11J
C36	A	D	11K
C37	A	D	12K
C38	A	D	12L
C39	B	C	12K
C40	A	D	12K
C41	B	C	11J
C42	B	C	11J
C51	A	D	17E
C52	A	D	9M
C53	B	C	10K
C54	B	C	11K
C55	B	C	11L
C56	B	C	11K
C57	B	C	8M
C59	B	C	7K
C60	A	D	7K
C61	B	C	12O
C62	B	C	11N
C63	B	C	10N
C64	B	C	9K
C69	B	C	16N
C70	B	C	16N
C71	B	C	8M
C72	B	C	7L
C73	B	C	7L
C74	B	C	7K
C75	B	C	8L
C76	B	C	8K
C77	B	C	8L
C80	B	C	9L
C81	B	C	9L
C82	B	C	9N
C84	B	C	11N
C96	B	C	10J
C103	B	C	8L
C106	B	C	10N
C108	B	C	10K
C109	B	C	9N
C110	B	C	11N
C120	B	C	11J
C135	B	C	9M
C136	B	C	11N
C137	B	C	15N
C201	A	D	11G
C202	B	C	11G
C203	A	D	11G
C205	B	C	12G
C207	B	C	11G
C208	B	C	10G
C209	B	C	10G
C210	B	C	10G
C211	B	C	10G
C220	B	C	12G
C401	B	C	15O
C402	B	C	15O
C403	B	C	15O
C404	B	C	16O
C405	B	C	16O
C406	B	C	16O
C407	B	C	16O
C408	B	C	17O
C409	A	D	17O
C501	A	D	17G
C502	A	D	16F
C503	A	D	18F
C504	B	C	17F
C505	A	D	19E
C506	B	C	18G
C507	A	D	18G
C508	A	D	19F
C509	A	D	19F
C510	A	D	19F
C511	B	C	19F
C512	B	C	20F
C513	A	D	19F
C514	B	C	19G
C515	A	D	19H
C516	B	C	18H
C517	B	C	18I
C518	B	C	19H
C519	A	D	19G
C520	A	D	19H
C521	A	D	19E
C522	A	D	20E
C523	A	D	20E
C524	B	C	19E
C525	B	C	19E
C526	B	C	19D
C527	B	C	19D
C528	B	C	20E
C529	B	C	20D
C530	B	C	20D
C531	B	C	21E
C532	B	C	20E
C533	B	C	20E
C534	A	D	20E
C535	B	C	19F
C551	A	D	18H
C552	B	C	18H
C553	B	C	18H
C554	A	D	18G
C555	B	C	18G
C556	B	C	18G
C557	A	D	17G
C558	B	C	17G
C559	B	C	17G
C560	A	D	17G
C561	A	D	17G
C563	B	C	18F
C565	B	C	19F
C567	B	C	19H
C901	A	D	20O
C903	A	D	19N
C904	B	C	19N
C911	B	C	12P
C912	B	C	18N
C913	A	D	18N
C914	B	C	20G
C915	B	C	12P
C2001	A	D	13K
C2002	A	D	14L
C2003	A	D	14N
C2004	B	C	14N
C2005	A	D	14O
C2006	B	C	13O
C2007	A	D	13O
C2008	A	D	13N
C2009	B	C	13O
C2010	B	C	13O
C2011	A	D	12O
C2012	A	D	12O
C2014	B	C	12K
C2015	B	C	13O
C2017	A	D	9O
C2051	B	C	8N
C2052	A	D	8O
C2053	B	C	7P
C2054	B	C	7O
C2055	A	D	8O
C2061	A	D	19L
C2062	B	C	6K
C2063	B	C	6J
C2064	A	D	6K
C2201	B	C	12K
C2202	B	C	12L
C2203	A	D	12K
C2204	B	C	11K
C2205	A	D	12J
C2206	A	D	12J
C2207	A	D	13J
C2208	A	D	13K
C2209	A	D	13K
C2210	A	D	13K
C2211	A	D	14K
C2212	A	D	14K
C2215	A	D	13L
C2216	A	D	13L
C2217	A	D	13L
C2218	A	D	14M
C2219	A	D	15L
C2220	A	D	15L
C2221	B	C	15L
C2222	A	D	15M
C2223	A	D	15M
C2224	B	C	15L
C2225	A	D	16L
C2226	A	D	14M
C2227	B	C	14M
C2232	A	D	15L
C2233	A	D	15L
C2234	A	D	15L
C2235	A	D	18M
C2236	A	D	18M
C2237	A	D	14L
C2238	A	D	15K
C2251	A	D	14N
C2252	B	C	14N
C2253	B	C	15N
C2254	B	C	15N
C3001	B	C	7N
C3002	B	C	6M
C3003	A	D	5M
C3007	B	C	4J
C3008	B	C	19I
C3013	A	D	13D
C3015	B	C	13E
C3016	B	C	13F
C3017	B	C	13F
C3018	A	D	13F
C3019	B	C	13F
C3020	B	C	12F
C3022	B	C	14D
C3023	B	C	16B
C3024	A	D	4D
C3025	B	C	4D
C3026	A	D	2D
C3027	A	D	4D
C3028	A	D	2D
C3029	B	C	5E
C3030	A	D	5E
C3035	B	C	12F
C3036	A	D	13F
C3041	B	C	9G
C3042	B	C	9G
C3043	B	C	13D
C3045	B	C	13D
C3048	B	C	14D
C3049	B	C	11H
C3052	B	C	11F
C3053	A	D	16A
C3054	B	C	20N
C4001	B	C	7M
C4002	A	D	7H
C4004	A	D	9F
C4006	B	C	10F
C4007	B	C	10E
C4008	A	D	9F
C4009	B	C	9E
C4010	A	D	9F
C4011	B	C	7F
C4012	B	C	10F
C4014	B	C	10F
C4015	B	C	10F
C4016	A	D	5F
C4017	B	C	5F
C4019	B	C	10E
C4022	B	C	10F
C4024	A	D	8E
C4025	B	C	9E
C4031	A	D	6N
C5001	A	D	2P
C5002	A	D	4N
C5003	A	D	4P
C5004	A	D	1K
C5006	A	D	3M
C5101	A	D	2N
C5102	A	D	2L
C5103	B	C	3L
C5104	A	D	2M
C5105	A	D	3M
C5107	A	D	3L
C5201	A	D	1H
C5202	A	D	2H
C5203	A	D	2G
C5204	A	D	4K
C5205	A	D	2I
C5206	A	D	2E
C5207	A	D	3G
C5208	A	D	3H
C5209	A	D	3H
C5301	A	D	3E
C5302	A	D	3D
C5303	A	D	3E
C5304	B	C	2E
C5305	A	D	3F
C5306	A	D	4F
C5307	B	C	2F
C5311	B	C	1F
C6005	A	D	20L
C6006	B	C	22M
C6007	A	D	21M
C6008	B	C	22M
C6012	A	D	21O
C6013	B	C	22O
C6020	B	C	22N
C6021	B	C	22N
C6022	B	C	22N
C6023	B	C	22M
C6029	B	C	9E
C6033	B	C	22J
C6052	B	C	22O
C6053	B	C	22P
C6519	B	C	20K
C6520	B	C	20K
C6551	A	D	20L
C6552	B	C	21L
C6553	A	D	20K
C6554	B	C	20K
C6555	B	C	20K
C6601	A	D	20I
C6602	A	D	20J
C6603	B	C	20H
C6605	A	D	20J
C6606	A	D	20I
C6607	B	C	20H
C6608	B	C	20H
C6609	A	D	20H
C6613	A	D	20H
C6617	A	D	21H
C6619	A	D	21I
C6650	B	C	21E
C6651	B	C	22E
C6652	B	C	22E
C6653	B	C	21E
C6654	A	D	21D
C7001	A	D	9B
C7002	B	C	11B
C7003	A	D	7A
C7004	B	C	8A
C7005	B	C	11B
C7006	B	C	11B
C7007	A	D	13B
C7008	B	C	13B
C7009	A	D	12C
C7010	A	D	11B
C7011	A	D	13B
C7012	B	C	11B
C7013	B	C	10B
C7014	B	C	6B
C7015	A	D	13B
C7206	A	D	19L
CONNECTOR			
CN1	A	D	14O
CN501	A	D	22I
CN2001	A	D	9O
CN2002	A	D	19L
CN3001	A	D	7L
CN3002	A	D	7P
CN3003	A	D	7N
CN3004	A	D	9F
CN3005	A	D	3D
CN3007	A	D	8P
CN5001	A	D	1O
CN6701	A	D	21J
CN7001	A	D	2C
CN7101	A	D	21B
CN7102	A	D	20M
CN7103	A	D	20G
DIODE			
D1	A	D	18P
D2	A	D	17P
D3	B	C	9J
D4	A	D	8N
D5	A	D	7M
D6	B	C	9J
D2201	A	D	17N
D2202	A	D	15K
D3001	A	D	12H
D3002	A	D	13G
D3004	A	D	5F
D3005	A	D	5E
D3006	A	D	4D
D3007	B	C	14C
D3008	A	D	5N
D3010	A	D	14E
D3013	B	C	10P
D4003	B	C	14F
D5001	B	C	3N
D5101	A	D	1M
D5102	A	D	2L
D5103	A	D	4K
D5201	A	D	1J
D5202	A	D	3I
D5203	A	D	2I
D5204	A	D	3I
D5205	A	D	3I
D5206	A	D	2I
D5207	A	D	2I
D5209	A	D	3H
D5210	A	D	4J
D5211	A	D	2I
D5212	A	D	2H
D5214	A	D	3I
D5301	A	D	2I
D5302	B	C	3E
D5303	A	D	2E
D5304	B	C	2E
D5307	A	D	2F
D5308	A	D	3D
D5309	A	D	1E
D5310	A	D	1E
D5311	A	D	1C
D5312	B	C	4F
D5315	A	D	4H
D6002	A	D	21L
D6551	A	D	21L
D6650	B	C	21F
D7001	A	D	14B
D7002	A	D	8A
D7003	A	D	10B
D7004	A	D	10B
D7005	A	D	10B
D7006	A	D	8B
D7007	A	D	10B
D7008	A	D	16A
D7009	A	D	16A
IC			
IC1	B	C	12M
IC2	B	C	8K
IC501	B	C	19G
IC502	A	D	19E
IC2201	A	D	14K
IC3001	B	C	11E
IC3002	A	D	5M
IC3003	B	C	14D
IC3004	B	C	16B
IC5301	A	D	4E
IC6601	A	D	20I
IC6650	B	C	22E
IC7001	B	C	12B
IC7002	B	C	6C
IC7003	A	D	8A
JACK			
J1	A	D	20P
J2	A	D	21P
J3	A	D	11P
J4	A	D	12P
J5	A	D	13P
J7101	A	D	20A
J7104	A	D	19O
J7105	A	D	5D
COIL			
L1	A	D	16N
L2	A	D	12O
L3	A	D	7M
L4	A	D	10L
L5	A	D	11K
L11	A	D	11M
L13	A	D	9K
L15	A	D	7L
L16	A	D	8M
L18	A	D	7L
L19	A	D	7K
L20	A	D	11O
L24	A	D	11N
L27	A	D	10K
L28	A	D	11N
L201	A	D	11G
L203	A	D	12G
L401	A	D	16O
L402	A	D	16O
L501	A	D	20F
L502	A	D	17F
L503	A	D	18F
L504	A	D	20F
L901	A	D	19N
L2001	A	D	16M
L2251	A	D	15M
L4001	A	D	6N
L5201	A	D	3G
L5202	A	D	2F
L5301	A	D	4D
L6001	A	D	21N
L6003	A	D	21O
L6004	A	D	21K
L6032	A	D	22K
L6050	A	D	21N
L7201	A	D	19L
TRANSISTOR			
Q1	B	C	14N
Q2	B	C	15N
Q3	B	C	14O
Q4	B	C	14O
Q5	B	C	8M
Q7	B	C	8L
Q8	B	C	8L
Q9	B	C	8L
Q10	B	C	10K
Q11	B	C	10K
Q12	B	C	10K
Q13	B	C	11J
Q16	B	C	11O
Q17	B	C	10O
Q18	B	C	10N
Q21	B	C	10L
Q23	B	C	10M
Q25	B	C	10L
Q26	B	C	10K
Q27	B	C	10K
Q28	B	C	9N
Q32	B	C	9M
Q33	B	C	8K
Q38	B	C	10N
Q45	B	C	9N
Q201	B	C	11G
Q401	B	C	15O
Q402	B	C	16O
Q403	B	C	17O
Q404	B	C	16N
Q405	B	C	17O
Q901	B	C	20N
Q903	B	C	18N
Q904	B	C	19N
Q2001	B	C	13O
Q2002	B	C	13O
Q2003	B	C	12O
Q2004	B	C	13O
Q2005	B	C	14O
Q2006	B	C	9O
Q2051	B	C	7O
Q2052	B	C	8P
Q2053	B	C	8P
Q2054	B	C	8P
Q2055	B	C	9P
Q2061	B	C	6K
Q2062	B	C	6J
Q2063	B	C	7J
Q2251	B	C	16M
Q3001	A	D	4I
Q3002	A	D	19I
Q3003	B	C	5N
Q3004	B	C	4D
Q3005	B	C	16C
Q4001	B	C	14C
Q4002	B	C	5F
Q4003	B	C	9E
Q4004	B	C	9E
Q5101	A	D	2L
Q5102	A	D	4M
Q5301	A	D	2F
Q5302	A	D	2E
Q5303	B	C	2D
Q5304	A	D	3E
Q5305	B	C	3E
Q5306	B	C	4F
Q5308	B	C	4G
Q5311	B	C	3F
Q5312	A	D	1F
Q5313	B	C	4F
Q5314	B	C	4F
Q5315	A	D	3H
Q5316	B	C	3G
Q5317	B	C	3F
Q5318	B	C	3E
Q5319	B	C	1E
Q5321	A	D	2E
Q6030	B	C	22J
Q6031	B	C	22J
Q6501	B	C	19K
Q6502	B	C	20K
Q6551	A	D	20K
Q7001	B	C	6C
Q7002	B	C	6C
Q7003	B	C	5C
Q7004	B	C	5C
Q7005	B	C	5C
Q7151	B	C	18P
Q7152	B	C	18O
Q7201	A	D	19M
RESISTOR			
R1	B	C	12N
R2	B	C	12O
R3	B	C	11O
R4	B	C	9J
R5	B	C	10M
R6	B	C	11M
R7	B	C	11L
R8	B	C	11J
R9	B	C	11J
R12	B	C	8M
R21	B	C	16O
R22	B	C	16N
R23	B	C	8L
R24	B	C	8M
R25	B	C	8L
R26	B	C	8L
R27	B	C	8L
R28	B	C	8L
R29	B	C	8L
R30	B	C	7K
R31	B	C	7K
R32	B	C	8K
R33	B	C	11O
R34	B	C	11O
R35	B	C	11O
R36	B	C	11J
R37	B	C	11K
R38	B	C	11K
R39	B	C	11K
R41	B	C	10K
R42	B	C	10K
R43	B	C	10K
R44	B	C	10K
R45	B	C	10K
R46	B	C	10L
R48	B	C	10L
R49	B	C	10M
R54	B	C	10N
R62	B	C	10N
R66	B	C	9M
R67	B	C	10L
R68	B	C	8K
R69	B	C	10M
R75	B	C	10N
R76	B	C	9J
R77	B	C	9P
R78	B	C	12K
R79	B	C	12K
R90	B	C	10N
R92	B	C	10N
R93	B	C	10N
R104	B	C	10O
R110	B	C	9N
R111	A	D	9L
R112	B	C	9N
R118	B	C	12K
R120	B	C	14P
R201	B	C	12F
R202	B	C	11G
R203	B	C	10G
R204	B	C	10G
R205	B	C	11G
R206	B	C	11G
R207	B	C	10G
R401	B	C	15O
R402	B	C	16O
R403	B	C	16O
R404	B	C	16O
R405	B	C	16O
R406	B	C	16O
R407	B	C	16N
R408	B	C	16O
R501	B	C	20G
R502	B	C	20G
R503	B	C	17F
R504	B	C	19E
R505	B	C	19E
R506	B	C	19D
R507	B	C	20D
R508	B	C	19D
R509	B	C	19D
R510	B	C	19E
R511	B	C	20D
R512	B	C	20D
R513	B	C	20D
R514	B	C	20E
R515	B	C	20E
R522	B	C	18H
R523	B	C	18H
R524	B	C	17G
R525	B	C	19H
R901	B	C	21P
R902	B	C	21P
R904	A	D	20O
R905	B	C	20N
R911	B	C	20P
R912	B	C	21B
R913	B	C	10P
R914	B	C	12P
R915	B	C	12P
R916	B	C	13P
R917	B	C	14P
R918	B	C	18N
R919	A	D	19N
R920	B	C	18N
R921	B	C	18N
R922	A	D	19N
R924	B	C	20G
R925	B	C	20G
R926	B	C	12P
R927	B	C	11P
R2001	B	C	15J
R2002	B	C	15J
R2003	B	C	15K
R2004	B	C	15K
R2005	B	C	13L
R2006	B	C	13L
R2007	B	C	14K
R2008	B	C	13L
R2009	B	C	13L
R2010	B	C	14L
R2011	A	D	15M
R2012	B	C	16M
R2013	B	C	13N
R2014	B	C	13O
R2015	B	C	13O
R2016	B	C	13O
R2017	B	C	13O
R2018	B	C	12O
R2019	B	C	12O
R2020	B	C	13O
R2021	B	C	13N
R2022	B	C	9P
R2023	B	C	9P
R2051	B	C	7O
R2052	B	C	7O
R2053	B	C	7O
R2054	B	C	7O
R2055	B	C	7O
R2056	A	D	9O
R2057	B	C	8P
R2058	B	C	8P
R2059	B	C	8P
R2060	B	C	8P
R2061	B	C	6K
R2062	B	C	6J
R2063	B	C	6K
R2064	B	C	6J
R2065	B	C	6J
R2201	B	C	17N
R2202	B	C	13K
R2203	B	C	13K
R2204	B	C	13K
R2205	B	C	13K
R2206	B	C	15K
R2207	B	C	15K
R2213	B	C	14K
R2215	B	C	14L
R2217	B	C	14L
R2218	B	C	15L
R2219	B	C	15L
R2220	B	C	15M
R2222	B	C	14L
R2223	B	C	14L
R2224	B	C	14L
R2225	B	C	14L
R2232	B	C	17N
R2233	B	C	15K
R2234	B	C	16L
R2235	A	D	14L
R2236	B	C	14L
R2237	A	D	16K
R2251	A	D	16N
R3003	B	C	12D
R3004	B	C	8D
R3005	B	C	12D
R3006	B	C	14C
R3007	B	C	12D
R3008	A	D	12C
R3013	B	C	15C
R3014	B	C	13D
R3015	B	C	14C
R3017	B	C	13D
R3018	B	C	12E
R3019	B	C	15D
R3020	B	C	15D
R3021	B	C	13D
R3022	B	C	13D
R3026	B	C	14E
R3027	B	C	14E
R3028	B	C	13E
R3030	B	C	14F
R3031	B	C	14E
R3032	B	C	13E
R3035	B	C	13F
R3042	B	C	13G
R3043	B	C	12G
R3044	B	C	13G
R3045	B	C	13G
R3056	B	C	11F
R3057	B	C	10F
R3058	B	C	10F
R3059	B	C	8G
R3060	B	C	10F
R3078	B	C	8E
R3080	B	C	9E
R3081	B	C	8E
R3082	B	C	9D
R3083	B	C	9D
R3085	B	C	7E
R3086	B	C	7D
R3087	B	C	8D
R3088	B	C	9D
R3089	B	C	9D
R3090	B	C	10D
R3091	B	C	10D
R3092	B	C	10D
R3093	B	C	10D
R3094	B	C	9D
R3095	B	C	10D
R3096	B	C	10D
R3097	B	C	10D
R3098	B	C	11D
R3099	B	C	9D
R3100	B	C	11D
R3201	B	C	5M
R3202	B	C	5N
R3203	B	C	5N
R3204	A	D	6N
R3205	A	D	6F
R3206	B	C	9F
R3207	B	C	9F
R3208	B	C	9F
R3209	A	D	12H
R3210	A	D	8F
R3211	B	C	16D
R3212	B	C	16E
R3213	B	C	16E
R3214	B	C	9G
R3215	B	C	8G
R3216	A	D	6H
R3217	B	C	13G
R3218	B	C	6F
R3219	A	D	16D
R3220	B	C	14D
R3221	B	C	5M
R3222	B	C	14D
R3223	B	C	12F
R3224	B	C	13F
R3226	B	C	16B
R3227	B	C	16B
R3232	B	C	4D
R3233	B	C	4D
R3234	A	D	4G
R3235	A	D	8P
R3236	B	C	15C
R3237	B	C	14C
R3238	B	C	14C
R3240	B	C	2C
R3241	B	C	2C
R3242	B	C	12F
R3243	A	D	15H
R3244	B	C	16D
R4001	B	C	13F
R4002	B	C	11G
R4003	B	C	10F
R4004	B	C	15D
R4006	B	C	13E
R4010	B	C	9E
R4011	B	C	9E
R4012	B	C	8E
R4018	B	C	10F
R4019	B	C	9G
R4020	B	C	10G
R4021	B	C	9G
R4022	B	C	5F
R4024	A	D	8G
R4025	B	C	11H
R5001	A	D	3P
R5101	A	D	1L
R5102	A	D	1M
R5103	A	D	2M
R5104	A	D	1N
R5106	A	D	2L
R5107	A	D	3L
R5108	B	C	4L
R5109	B	C	3M
R5110	B	C	2L
R5113	B	C	2M
R5301	B	C	4I
R5302	B	C	4I
R5303	B	C	4H
R5304	B	C	4H
R5305	B	C	2E
R5306	B	C	2E
R5307	B	C	2G
R5308	B	C	2E
R5309	B	C	3E
R5310	B	C	3E
R5311	B	C	3D
R5312	B	C	4E
R5313	B	C	4F
R5314	B	C	3F
R5315	B	C	4F
R5316	B	C	4E
R5317	A	D	4H
R5318	A	D	1G
R5320	B	C	4H
R5321	A	D	4G
R5324	B	C	2E
R5325	A	D	2E
R5326	A	D	1F
R5327	B	C	1F
R5328	B	C	1F
R5330	B	C	1I
R5332	A	D	3G
R5333	A	D	2C
R5334	A	D	1C
R5335	B	C	3H
R5336	B	C	4H
R5337	B	C	3H
R5338	B	C	3F
R5339	B	C	3E
R5340	B	C	4E
R5341	B	C	4F
R5342	B	C	3F
R5343	B	C	3D
R6020	B	C	21N
R6021	B	C	21N
R6023	B	C	21M
R6030	B	C	22I
R6031	B	C	22L
R6032	B	C	21L
R6033	B	C	20K
R6034	B	C	22I
R6050	A	D	21O
R6051	A	D	21O
R6053	B	C	19P
R6508	A	D	20J
R6509	B	C	20K
R6510	B	C	20K
R6511	B	C	20K
R6551	B	C	20L
R6552	B	C	20L
R6607	B	C	20H
R6608	B	C	21I
R6609	B	C	21H
R6628	B	C	21H
R6629	B	C	21H
R6650	B	C	22F
R6651	B	C	22E
R6652	B	C	22E
R6653	B	C	21E
R6654	A	D	21E
R6655	B	C	21E
R6656	B	C	21E
R6657	B	C	21F
R6658	B	C	21E
R6659	B	C	21E
R6660	B	C	22E
R6661	B	C	21E
R7001	B	C	10B
R7002	B	C	11B
R7003	B	C	11B
R7004	B	C	11B
R7005	B	C	11B
R7006	B	C	11B
R7007	B	C	11C
R7008	B	C	13C
R7009	A	D	14B
R7010	B	C	8A
R7011	B	C	10B
R7012	A	D	7A
R7013	B	C	10B
R7014	B	C	11B
R7015	B	C	5A
R7016	B	C	2B
R7017	B	C	16A
R7018	B	C	15A
R7019	B	C	6B
R7020	B	C	17A
R7021	B	C	17A
R7022	B	C	7A
R7023	B	C	5A
R7024	B	C	3B
R7025	B	C	5A
R7026	A	D	8B
R7030	B	C	17A
R7031	B	C	6A
R7032	B	C	3A
R7033	B	C	2B
R7034	B	C	1B
R7035	B	C	2B
R7036	B	C	2B
R7037	B	C	2B
R7040	B	C	2C
R7041	B	C	2C
R7042	B	C	2B
R7043	B	C	2C
R7044	B	C	5C
R7151	B	C	18P
R7152	B	C	19O
R7155	B	C	6D
R7156	B	C	18O
R7202	B	C	19L
R7203	B	C	19L
R7204	A	D	19M
VR6601	A	D	19K
SWITCH			
S3001	A	D	18C
S3002	A	D	6F
S6050	A	D	18P
S7001	A	D	22B
S7002	A	D	18B
S7004	A	D	7B
S7006	A	D	6B
S7008	A	D	5B
S7010	A	D	4B
S7011	A	D	4B
S7012	A	D	3B
S7013	A	D	2B
S7014	A	D	2B
S7015	A	D	1B
S7016	A	D	17B
TEST POINT			
TP106	A	D	6P
TP111	A	D	5P
TP2253	A	D	6P
TP4001	A	D	6P
TP7001	A	D	3A
TPGND	A	D	4A
OTHER			
BT3001	A	D	3C
CF6031	A	D	22K
CP501	A	D	21G
CP4001	A	D	4G
CP5301	A	D	4E
CP5302	A	D	4G
DI7001	A	D	12A
DI7002	A	D	12A
F5001	A	D	2N
FC5001	A	D	2P
FC5002	A	D	2N
FW3001	A	D	21N
FW3002	A	D	19M
FW3003	A	D	20M
FW7104	A	D	18O
FW7105	A	D	6E
FW7106	A	D	4C
K2251	B	C	15N
K2252	B	C	15N
K2253	B	C	15N
K5101	A	D	2M
K5102	A	D	1N
K5301	A	D	3G
LF5002	A	D	4O
PC3001	A	D	16F
PC3002	A	D	8G
PC5101	A	D	4L
SG5001	A	D	1P
T2051	A	D	7O
T2052	A	D	6K
T5001	A	D	1K
TU6001	A	D	22P
VA5001	A	D	1P
VA5002	A	D	3P
X1	A	D	11L
X2	A	D	11L
X3001	A	D	13F
X3002	A	D	13F

4.13 2D DIGITAL AND DEMODULATOR CIRCUIT BOARDS

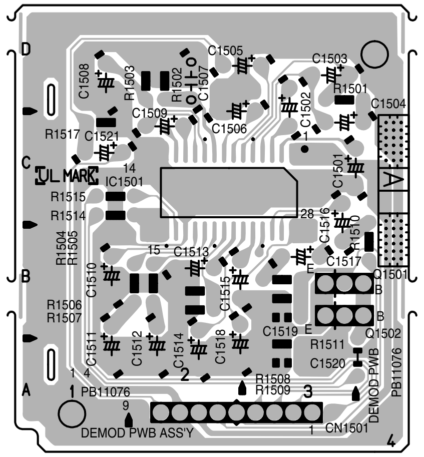
＜05＞2D DIGITAL
LPB10090-001B



COMPONENT PARTS LOCATION GUIDE
＜2D DIGITAL ＞

REF.NO.	LOCATION		
CAPACITOR			
C1201	A	D	5D
C1202	B	C	5C
C1203	B	C	1A
C1204	B	C	1A
C1205	B	C	2A
C1206	B	C	3A
C1207	B	C	4A
C1208	B	C	4A
C1209	B	C	4A
C1210	B	C	6B
C1211	A	D	2E
C1212	B	C	2D
C1213	B	C	2D
C1214	B	C	2D
C1215	A	D	2D
C1216	B	C	3D
C1217	B	C	2C
C1218	B	C	2C
C1219	B	C	3C
C1220	A	D	3B
C1221	B	C	2B
C1222	B	C	2B
C1223	B	C	2B
C1224	B	C	3B
C1225	B	C	3B
C1226	B	C	2B
C1227	B	C	3C
C1228	A	D	3B
C1229	B	C	4C
C1230	B	C	4C
C1231	B	C	4C
C1232	B	C	4C
C1233	A	D	4C
C1234	B	C	4D
C1235	A	D	4D
C1236	B	C	4D
C1237	B	C	3D
C1238	B	C	4B
C1239	B	C	5B
C1240	B	C	5B
C1241	B	C	5B
C1242	A	D	5B
C1243	B	C	2A
C1244	A	D	3B
C1245	B	C	5B
C1246	A	D	5C
C1247	B	C	5C
C1248	B	C	4A
C1249	B	C	5B
C1250	B	C	5A
CONNECTOR			
CN1201	A	D	5A
DIODE			
D1201	A	D	5C
D1202	A	D	2A
D1203	A	D	3A
IC			
IC1201	B	C	3D
COIL			
L1201	A	D	5A
L1202	A	D	3E
L1203	A	D	4D
L1204	A	D	4B
L1205	A	D	2B
L1206	A	D	3B
L1207	A	D	4D
L1208	A	D	4B
L1209	A	D	5B
TRANSISTOR			
Q1201	A	D	5C
Q1202	B	C	2B
Q1203	B	C	3B
Q1204	B	C	4B
Q1205	B	C	3C
Q1206	B	C	4B
RESISTOR			
R1201	B	C	5C
R1202	B	C	5C
R1203	B	C	1A
R1204	B	C	1A
R1205	B	C	2A
R1206	B	C	5A
R1207	B	C	2D
R1208	B	C	2D
R1209	B	C	2D
R1210	B	C	3B
R1211	B	C	2C
R1212	B	C	2B
R1213	B	C	1B
R1214	B	C	2B
R1215	B	C	3B
R1216	B	C	2B
R1217	B	C	2B
R1218	B	C	3C
R1219	B	C	4C
R1220	B	C	4A
R1221	B	C	4B
R1222	B	C	4B
R1223	B	C	1B
R1224	B	C	4C
R1225	B	C	4A
R1226	B	C	4A
R1227	B	C	4B
R1228	B	C	4B
R1229	B	C	4B
R1230	B	C	2A
R1231	B	C	4B
R1232	B	C	3B
R1233	B	C	5A
VR1201	A	D	1E
OTHER			
LC1201	A	D	5B

＜14＞DEMODULATOR
PB11076

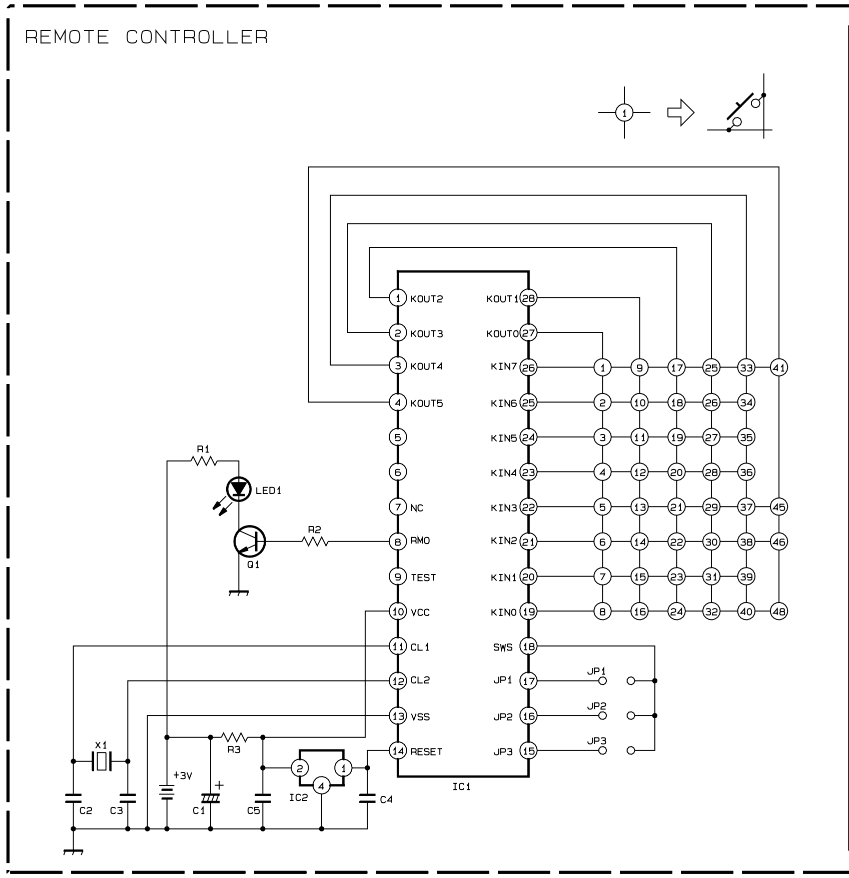


COMPONENT PARTS LOCATION GUIDE
＜DEMODULATOR＞

REF.NO.	LOCATION		
CAPACITOR			
C1501	A	D	4C
C1502	A	D	3D
C1503	A	D	4D
C1504	A	D	4C
C1505	A	D	3D
C1506	A	D	3C
C1507	A	D	2C
C1508	A	D	1D
C1509	A	D	2C
C1510	A	D	1B
C1511	A	D	1A
C1512	A	D	2A
C1513	A	D	2B
C1514	A	D	2A
C1515	A	D	3B
C1516	A	D	3C
C1517	A	D	3B
C1518	A	D	3A
C1519	A	D	3B
C1520	A	D	3A
C1521	A	D	2C
CONNECTOR			
CN1501	A	D	3A
IC			
IC1501	B	C	2C
TRANSISTOR			
Q1501	A	D	3B
Q1502	A	D	3B
RESISTOR			
R1501	A	D	4C
R1502	A	D	2C
R1503	A	D	2C
R1504	A	D	2B
R1505	A	D	2B
R1506	A	D	2B
R1507	A	D	2B
R1508	A	D	3B
R1509	A	D	3B
R1510	A	D	4B
R1511	A	D	3A
R1514	A	D	2B
R1515	A	D	2C
R1517	A	D	2C

4.14 REMOTE CONTROLLER SCHEMATIC DIAGRAM

NOTES:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.

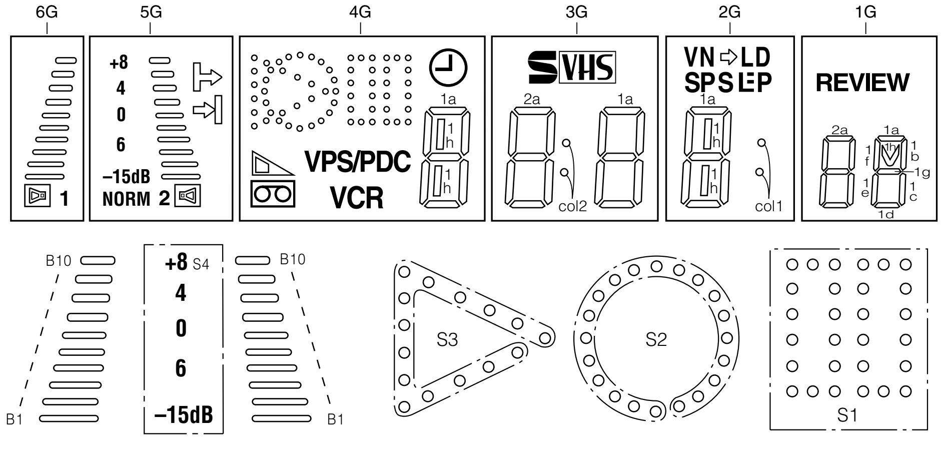


(LP20303-015#)

Key No.	Key Name
1	START+
2	1
3	4
4	STOP+
5	DATE+
6	CH+
7	3
8	6
9	CANSEL/C.RESET
10	2
11	7/DBS
12	0/AUX
13	8/DAILY(M-F)
14	TIMER
15	5
16	9/WEEKLY
17	PROG.
18	CABLE/DBS
19	TV
20	PROG.CHEK
21	SP/EP
22	SKIP SEARCH
23	POWER
24	MBR SET/A/B
25	START-
26	TV/VCR
27	RE.VIEW
28	STOP-
29	DATE-
30	CH-
31	DISPLAY
32	AUDIO/MUTE
33	MENU
34	REC
35	REW
36	PLAY
37	STOP
38	FF
39	PAUSE/STILL
40	OK/ENTER/OSO
41	<</TV VOL-
45	Δ/TV CH+
46	∇/TV CH-
48	>>/TV VOL+
34+36	REC+PLAY
34+39	REC+PAUSE

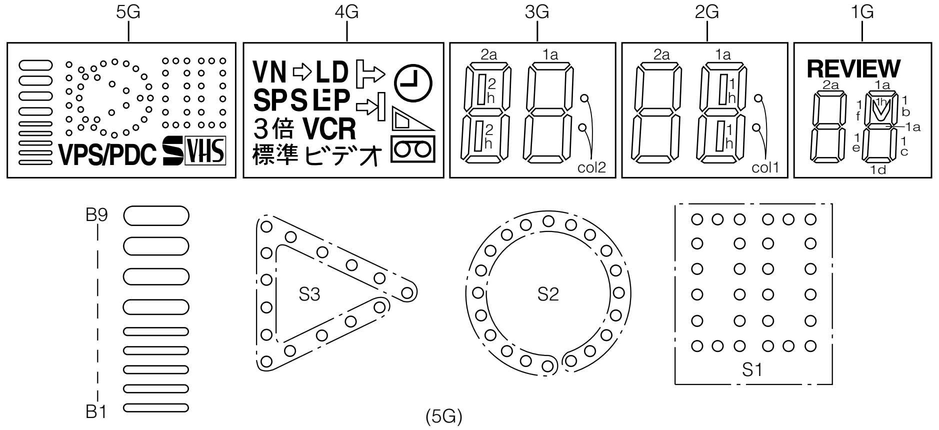
4.15 FDP GRID ASSIGNMENT AND ANODE CONNECTION

[A] (FDP with audio level indicator)



(6G, 5G) (4G)

[B] (FDP without audio level indicator)



(5G)

ANODE CONNECTION
[A]

	6G	5G	4G	3G	2G	1G
P 1	—	↦	S2	1a	1a	1a
P 2	—	⇥	S1	1b	1b	1b
P 3	—	S4	S3	1f	1f	1f
P 4	—	NORM	VPS/PDC	1g	1g	1g
P 5	1	2	◷	1c	1c	1c
P 6	⊳	⊲	◺	1e	1e	1e
P 7	B10	B10	⌼	1d	1d	1d
P 8	B9	B9	VCR	col2	1h	1h
P 9	B8	B8	1a	2a	col1	2a
P10	B7	B7	1b	2b	⇨	2b
P11	B6	B6	1f	2f	VN	2f
P12	B5	B5	1g	2g	LD	2g
P13	B4	B4	1c	2c	SP	2c
P14	B3	B3	1e	2e	S (SEP)	2e
P15	B2	B2	1d	2d	: (SEP)	2d
P16	B1	B1	1h	SVHS	LP (SEP)	REVIEW

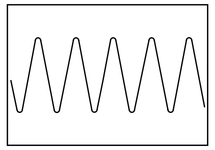
ANODE CONNECTION
[B]

	5G	4G	3G	2G	1G
P 1	S2	↦	1a	1a	1a
P 2	S1	⇥	1b	1b	1b
P 3	S3	3倍	1f	1f	1f
P 4	VPS/PDC	標準	1g	1g	1g
P 5	SVHS	◷	1c	1c	1c
P 6	—	◺	1e	1e	1e
P 7	—	⌼	1d	1d	1d
P 8	B9	VCR	col2	1h	1h
P 9	B8	ビデオ	2a	2a	2a
P10	B7	⇨	2b	2b	2b
P11	B6	VN	2f	2f	2f
P12	B5	LD	2g	2g	2g
P13	B4	SP	2c	2c	2c
P14	B3	S (SEP)	2e	2e	2e
P15	B2	: (SEP)	2d	2d	2d
P16	B1	LP (SEP)	2h	col1	REVIEW

4.16 WAVEFORMS

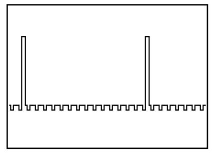
< SYSCON >

WF1 CN3001-2 CAP_FG



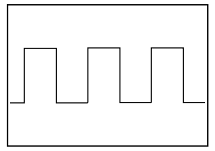
REC/PB 2.9 Vp-p
50 mV/0.5 msec/DIV

WF2 CN3002-4 D.PG



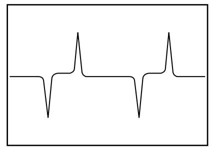
REC/PB 4.5 Vp-p
0.1 V/10 msec/DIV

WF3 CN3002-5 D.FG



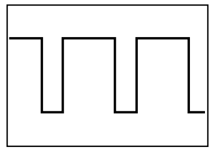
REC/PB 4.2 Vp-p
0.1 V/1 msec/DIV

WF4 TP4001 CTL.P



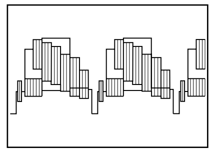
PB 3.0 Vp-p
0.1 V/10 msec/DIV

WF5 IC3001-74 CTL_+



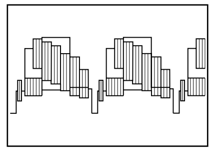
REC 3.6 Vp-p
1.0 V/10 msec/DIV

WF6 IC3001-49 CVIN



REC/PB 2.2 Vp-p
50 mV/20 µsec/DIV

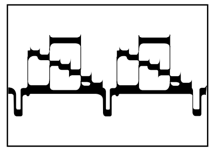
WF7 IC3001-47 VIDEO_OUT



REC/PB 2.2 Vp-p
50 mV/20 µsec/DIV

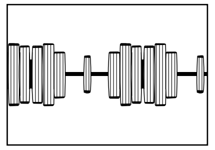
< S-SUB >

WF1 IC501-1



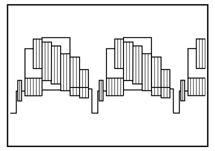
REC 1.0 Vp-p
20 mV/20 µsec/DIV

WF2 IC501-3



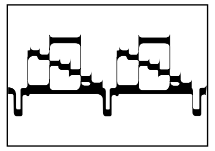
REC 0.7 Vp-p
20 mV/20 µsec/DIV

WF3 IC501-14



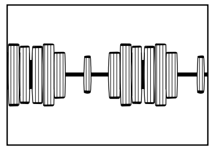
REC 1.2 Vp-p
50 mV/20 µsec/DIV

WF4 IC501-15



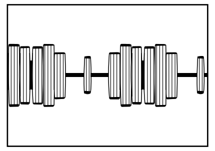
REC/PB 2.2 Vp-p
50 mV/20 µsec/DIV

WF5-1 IC501-17



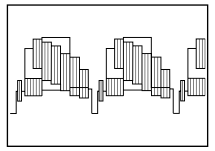
REC 1.4 Vp-p
50 mV/20 µsec/DIV

WF5-2 IC501-17



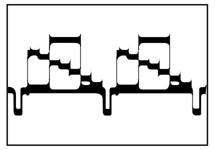
PB 1.2 Vp-p
50 mV/20 µsec/DIV

WF6 IC501-19



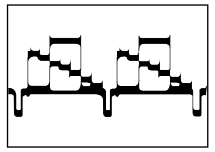
REC/PB 2.2 Vp-p
50 mV/20 µsec/DIV

WF7 IC501-29



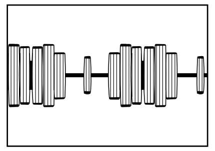
REC/PB 0.52 Vp-p
20 mV/20 µsec/DIV

WF8 IC501-31



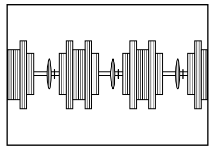
PB 0.5 Vp-p
20 mV/20 µsec/DIV

WF9 IC501-33



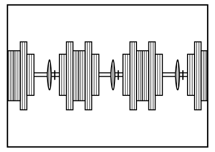
REC 0.68 Vp-p
20 mV/20 µsec/DIV

WF10-1 IC501-42



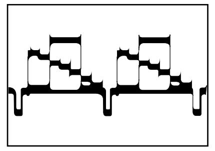
REC 0.57 Vp-p
20 mV/20 µsec/DIV

WF10-2 IC501-42



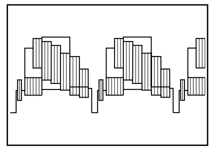
PB 0.64 Vp-p
20 mV/20 µsec/DIV

WF11 IC501-43



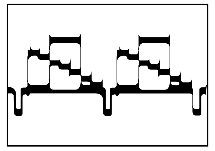
REC/PB 0.76 Vp-p
20 mV/20 µsec/DIV

WF12-1 IC501-45



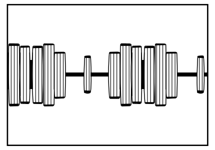
REC 1.7 Vp-p
50 mV/20 µsec/DIV

WF12-2 IC501-45



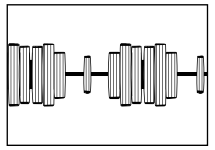
PB 1.7 Vp-p
50 mV/20 µsec/DIV

WF13 IC501-47



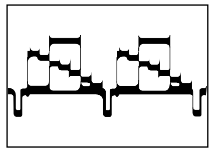
PB 1.0 Vp-p
50 mV/20 µsec/DIV

WF14 IC501-48



PB 0.7 Vp-p
20 mV/20 µsec/DIV

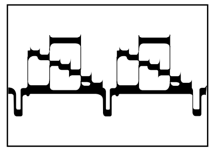
WF15 IC501-56



PB 2.1 Vp-p
50 mV/20 µsec/DIV

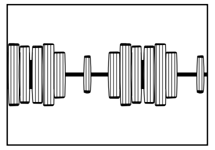
< VIDEO >

WF1 IC1-27



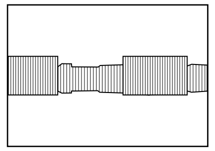
PB 2.1 Vp-p
50 mV/20 µsec/DIV

WF2 IC1-30



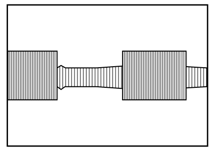
PB 0.64 Vp-p
20 mV/20 µsec/DIV

WF3 IC1-1



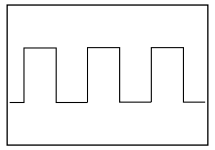
PB 0.7 Vp-p
50 mV/5 msec/DIV

WF4 TP106 PB.FM



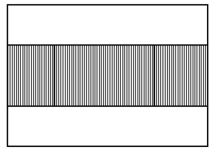
PB 0.6 Vp-p
0.1 V/5 msec/DIV

WF5 TP111 D.FF



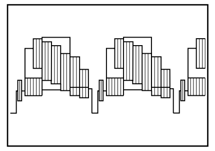
REC/PB 4.2 Vp-p
0.5 V/10 msec/DIV

WF6 IC1-105



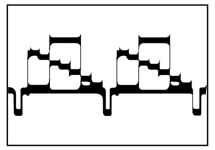
REC 2.1 Vp-p
0.1 V/1 msec/DIV

WF7-1 IC1-14



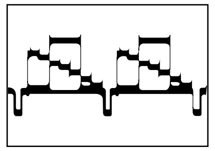
REC 0.52 Vp-p
20 mV/20 µsec/DIV

WF7-2 IC1-14



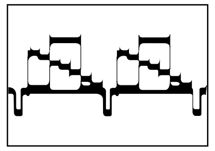
PB 0.5 Vp-p
20 mV/20 µsec/DIV

WF8 IC1-13



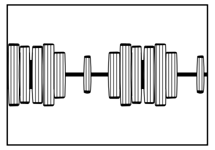
REC/PB 0.52 Vp-p
20 mV/20 µsec/DIV

WF9 IC1-11



REC/PB 0.52 Vp-p
20 mV/20 µsec/DIV

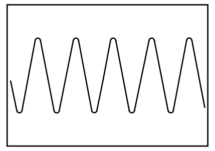
WF10 IC1-16



REC 0.68 Vp-p
20 mV/20 µsec/DIV

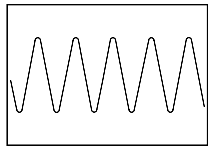
< AUDIO >

WF1 IC1-80



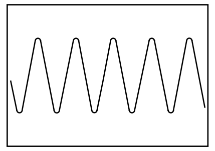
REC 0.2 Vp-p
5 mV/0.5 msec/DIV

WF2 IC1-62



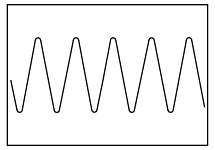
REC/PB 0.9 Vp-p
20 mV/0.5 msec/DIV

WF3 IC1-52



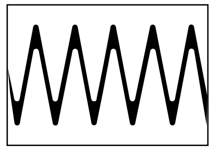
REC 0.11 Vp-p
2 mV/0.5 msec/DIV

WF4 IC1-48



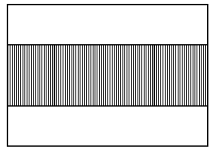
PB 0.72 Vp-p
20 mV/0.5 msec/DIV

WF5 IC1-119



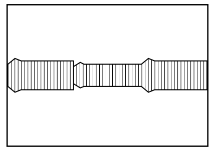
REC 0.8 Vp-p
20 mV/0.5 msec/DIV

WF6 IC1-97



REC 2.5 Vp-p
0.1 V/5 msec/DIV

WF7 TP2253 A.PB.FM



PB 0.8 Vp-p
50 mV/5 msec/DIV

4.17 VOLTAGE CHARTS

<MAIN>

MODE PIN NO.	REC	PLAY
IC1		
1	1.6	2.1
2	2.8	2.8
3	2.6	2.6
4	1.9	1.5
5	1.9	1.5
6	2.4	2.1
7	1.5	0.8
8	0	0
9	2.7	3.1
10	2.4	2.4
11	3.1	3.1
12	2.8	2.4
13	3.1	3.1
14	3.6	2.4
15	0	0
16	2.8	2.8
17	1.5	1.5
18	2.8	2.8
19	0.9	1.1
20	2.8	2.8
21	1.5	1.9
22	2.8	2.8
23	3.1	2.9
24	5.0	5.0
25	0.4	0.4
26	0	0
27	1.3	2.3
28	2.8	2.4
29	1.9	1.9
30	2.1	2.1
31	0	0
32	2.4	2.4
33	5.0	5.0
34	2.7	2.4
35	5.0	5.0
36	2.4	2.4
37	2.3	2.8
38	0.2	0.3
39	1.3	1.2
40	1.7	1.7
41	2.7	2.7
42	2.2	2.2
43	0	0
44	2.1	2.1
45	3.4	3.4
46	3.8	3.8
47	2.9	2.9
48	2.6	2.6
49	5.0	5.0
50	2.5	2.5
51	2.8	2.8
52	2.3	2.3
53	2.3	2.3
54	2.4	2.4
55	2.2	2.2
56	0.5	0.5
57	2.3	2.3
58	8.8	8.8
59	4.5	4.5
60	4.5	4.5
61	4.6	4.5
62	4.5	4.4
63	2.3	2.3
64	2.3	2.3
65	0.7	0.7
66	0.7	0.7
67	3.3	3.3
68	3.3	3.3
69	2.3	2.3
70	0	0
71	0.2	0.2
72	0.2	0.2
73	0.2	0.2
74	2.3	2.3
75	2.7	2.7
76	0	0
77	2.7	2.7
78	0.2	0.2
79	0.2	0.2
80	0.2	0.2
81	2.3	2.3
82	0.7	0.8
83	0	0
84	2.3	2.3
85	2.3	2.3
86	2.3	2.3
87	1.7	1.8
88	2.3	2.3
89	2.3	2.3
90	2.3	2.3
91	0.1	0.1
92	0	0
93	0	2.4
94	0	2.0
95	0	0
96	2.5	2.3
97	2.7	2.3
98	2.6	2.3
99	5.0	5.0
100	5.0	5.0
101	0	0
102	0	0
103	0	0
104	2.3	2.3
105	2.5	2.3
106	2.3	2.3
107	5.0	5.0
108	0	0
109	0	0
110	0	0
111	0	2.7
112	2.5	2.5
113	0.5	0.5
114	0	0
115	2.6	2.6
116	2.5	2.5
117	2.5	2.5
118	0	0
119	2.5	2.5
120	0	0
IC501		
1	2.8	2.8
2	0	0
3	2.1	2.1
4	4.9	4.9
5	2.8	2.8
6	0	0
7	2.8	2.8
8	0.1	0
9	2.8	2.8
10	0	0
11	2.1	2.1
12	2.8	2.8
13	0	0
14	2.8	2.8
15	2.3	2.3
16	2.7	2.7
17	2.4	2.4
18	0	0
19	2.3	2.3
20	0	0
21	3.5	3.5
22	2.7	2.7
23	2.9	2.1
24	2.8	2.8
25	2.8	2.8
26	4.9	4.9
27	3.0	3.0
28	2.4	2.3
29	2.5	2.3
30	4.9	4.9
31	2.7	3.0
32	0.1	4.9
33	2.8	2.8
34	2.8	2.8
35	2.8	2.8
36	2.8	2.8
37	0	0
38	3.7	3.7
39	3.3	3.3
40	2.8	2.8
41	2.6	2.6
42	2.8	2.8
43	3.3	3.3
44	2.0	1.9
45	2.0	2.0
46	4.9	4.9
47	0.5	2.4
48	2.8	2.8
49	0	0
50	2.8	2.8
51	2.9	2.9
52	2.4	2.4
53	3.1	3.1
54	2.3	2.4
55	1.9	1.1
56	2.5	3.4
IC502		
1	2.0	2.0
2	1.4	4.9
3	3.3	3.3
4	3.4	3.4
5	4.9	4.9
6	2.2	2.2
7	2.0	2.0
8	4.9	4.9
9	1.5	1.5
10	2.9	2.8
11	2.9	2.8
12	2.9	2.8
13	0	0
14	2.8	2.8
15	2.8	2.8
16	1.9	2.0
17	1.9	2.0
18	1.9	2.0
IC3001		
1	-	-
2	-	-
3	0.6	0.6
4	4.8	0
5	4.8	4.8
6	0	0
7	0	0
8	4.8	0
9	0	0
10	4.8	4.8
11	0	0
12	0	0
13	4.8	4.8
14	0	0
15	0	4.8
16	4.8	4.8
17	3.7	3.7
18	3.2	3.2
19	4.8	0
20	4.8	0
21	0.9	1.1
22	4.3	4.3
23	2.4	2.4
24	0	0
25	-	-
26	0	2.4
27	4.8	0
28	4.8	4.8
29	0	0
30	4.8	4.8
31	4.8	4.8
32	0	0
33	2.5	2.5
34	1.4	1.4
35	0	0
36	4.8	4.8
37	-	-
38	-	-
39	2.4	0
40	-	-
41	-	-
42	0	0
43	4.8	4.8
44	0	0
45	4.8	4.8
46	4.4	4.4
47	2.3	2.3
48	0	0
49	2.3	2.3
50	2.5	2.5
51	5.0	5.0
52	2.5	2.5
53	2.5	2.5
54	0	0
55	0	0
56	4.5	4.5
57	4.5	4.5
58	0	0
59	4.8	4.8
60	0	0
61	0	0
62	4.9	4.9
63	4.9	4.9
64	4.9	4.9
65	2.6	2.6
66	0.4	0.4
67	2.4	2.4
68	2.4	2.4
69	2.4	2.4
70	2.4	2.4
71	0	0
72	2.4	2.4
73	4.9	4.9
74	2.9	2.9
75	1.9	2.4
76	2.4	2.4
77	0	0
78	0	0
79	0	0
80	1.1	1.1
81	0	0
82	0	2.7
83	0	2.0
84	4.9	4.9
85	0	0
86	0	0
87	-	-
88	0	0
89	0	0
90	4.9	4.9
91	0	0
92	0	0
93	0	0
94	4.9	4.9
95	3.8	3.8
96	4.5	4.5
97	0.4	0.4
98	0.1	0.1
99	0	0
100	4.9	4.9
IC3002		
1	7.3	7.3
2	0.1	0.1
3	0	0
4	0.1	0.1
5	11.6	11.6
6	11.6	11.6
7	0	0
8	0	0
9	0	0
IC3003		
1	4.9	4.9
2	4.9	4.9
3	0	0
4	0	0
IC3004		
1	0	0
2	0	0
3	0	0
4	0	0
5	4.5	4.5
6	4.5	4.5
7	0	0
8	4.9	4.9
IC5301		
1	2.4	2.4
2	0	0
3	4.4	4.4
IC7001		
1	4.9	4.9
2	0	0
3	0	0
4	0	0
5	0.7	0.7
6	0.7	0.7
7	0	0
8	4.5	4.5
9	4.5	4.5
10	0	0
11	0	0
12	0	0
13	0	0
14	4.9	4.9
15	-	-
16	-	-
17	-	-
18	-	-
19	-	-
20	-	-
21	-	-
22	-	-
23	-	-
24	-	-
25	-	-
26	-	-
27	-27.4	-27.4
28	-	-
29	-	-
30	-	-
31	-	-
32	-	-
33	-	-
34	-	-
35	-	-
36	-	-
37	-	-
38	4.9	4.9
39	4.9	4.9
40	4.9	4.9
41	4.9	4.9
42	4.9	4.9
43	0	0
44	2.6	2.6
IC7003		
1	4.9	4.9
2	4.9	4.9
3	0	0
CN1		
1	0	0
2	0	0
3	0	0
4	0	0
5	2.4	2.4
6	2.4	2.4
7	2.4	2.4
8	2.4	2.4
9	2.7	2.4
10	2.7	2.4
11	2.7	2.4
12	0	0
13	0	0
CN501		
1	3.7	3.7
2	0	0
3	0.5	2.4
4	5.0	5.0
5	2.0	2.0
6	0.1	4.9
7	3.3	3.3
8	0	0
9	2.8	2.8
10	0	0
11	3.3	3.3
12	3.8	3.8
13	0	0
14	0	0
15	2.4	2.4
16	0	0
17	0	0
CN2001		
1	0.1	0.1
2	0	0
3	0	0
4	0	0
5	0	0
6	2.3	2.3
7	2.6	2.3
CN2002		
1	0	0
2	0	0
CN3001		
1	0	0
2	2.5	2.5
3	2.5	2.5
4	5.0	5.0
5	0	0
6	4.9	4.9
7	-	-
8	11.6	11.6
CN3002		
1	11.6	11.6
2	0	0
3	1.3	1.3
4	0.3	0.3
5	2.6	2.6
CN3003		
1	0.2	0.2
2	0.3	0.3
CN3004		
1	4.9	4.9
2	4.9	4.9
3	0	0
4	0	0
CN6701		
1	0	0
2	4.5	4.5
3	4.5	4.5
4	4.8	4.8
5	0	0
6	0	0
7	8.9	8.9
8	0	0
9	2.3	2.3
CN7001		
1	4.9	4.9
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	3.0	3.0
CN7103		
1	0	0
2	0	0
3	0	0
4	0	0
FW3001		
1	0	0
2	0	0
FW3002		
1	0	0
2	0	0
5	0	0
6	0	0
7	8.9	8.9
8	0	0
9	2.3	2.3

<S-JACK> [HR-S5900U/U(C)]

MODE PIN NO.	REC	PLAY
CN7108		
1	0	0
2	0	0
3	0	0
4	0	0

<ADV.JOG>

MODE PIN NO.	REC	PLAY
CN7004		
1	4.9	4.9
2	4.9	4.9
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0

<R.PAUSE>

MODE PIN NO.	REC	PLAY
FW7104		
1	0	0
2	0	0

<C.BOX CTL>

MODE PIN NO.	REC	PLAY
FW7105		
1	0	0
2	0	0

<2D DIGITAL>

MODE PIN NO.	REC	PLAY
IC1201	-	-
CN1201		
1	3.7	3.7
2	0	0
3	0.5	2.4
4	5.0	5.0
5	2.0	2.0
6	0.1	4.9
7	3.3	3.3
8	0	0
9	2.8	2.8
10	0	0
11	3.3	3.3
12	3.8	3.8
13	0	0
14	0	0
15	2.4	2.4
16	0	0
17	0	0

<DEMODULATOR>

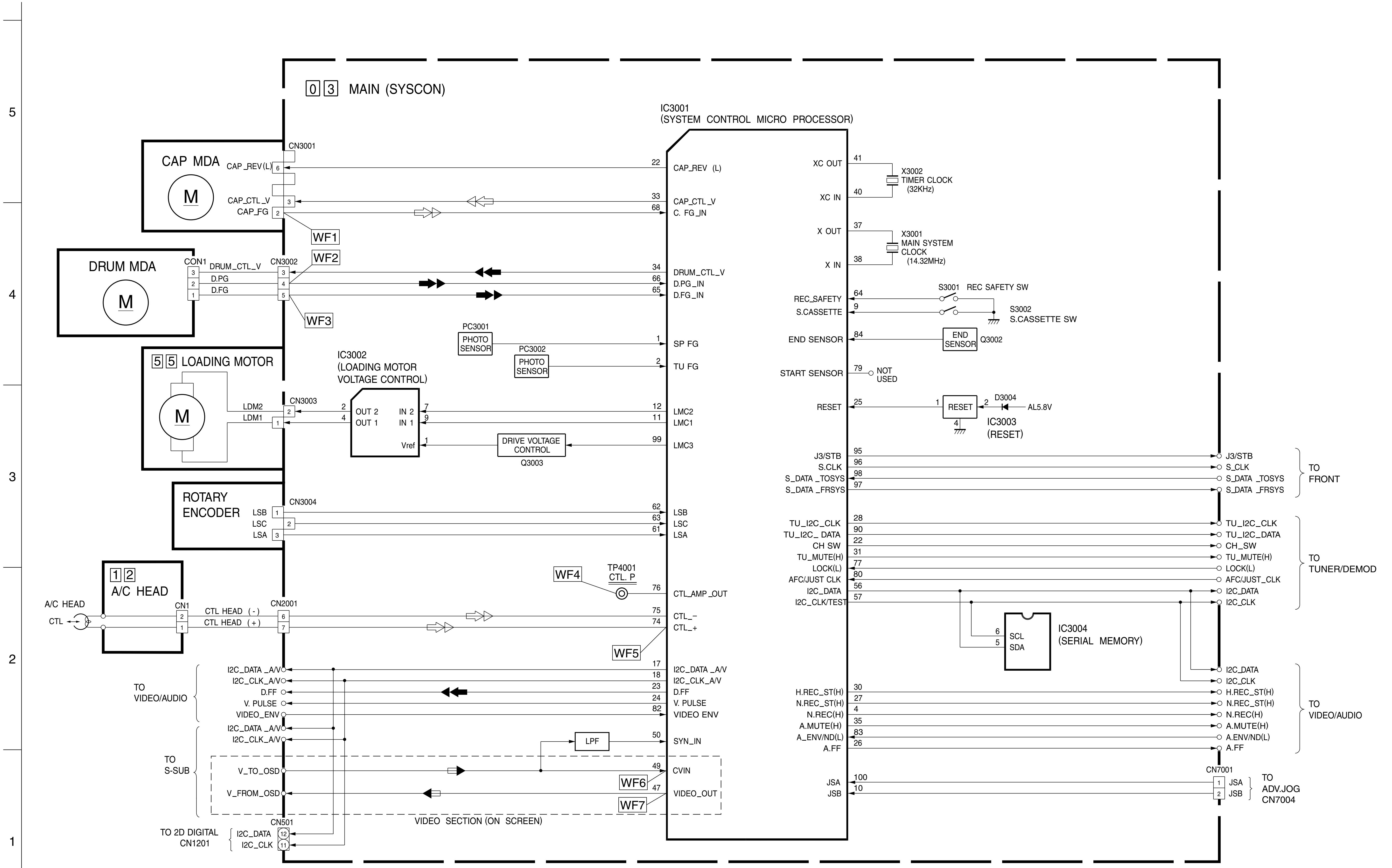
MODE PIN NO.	REC	PLAY
IC1501	-	-
CN1501		
1	0	0
2	4.5	4.5
3	4.5	4.5
4	4.8	4.8

4.18 CPU PIN FUNCTION

<SYSCON IC3001>

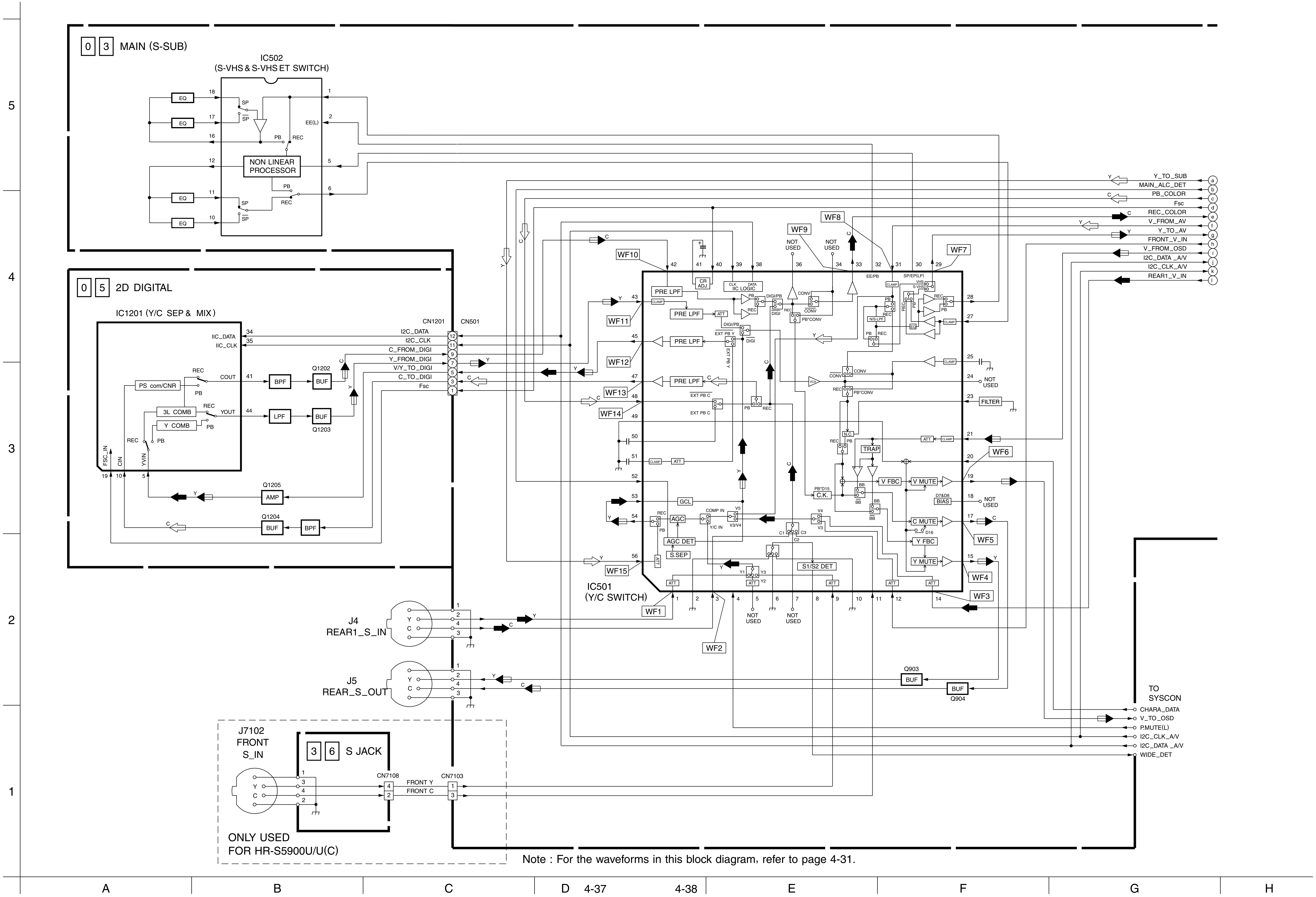
PIN No.	LABEL	IN/OUT	FUNCTION
1	SP FG	IN	DETECTION SIGNAL FOR SUPPLY REEL ROTATION/TAPE REMAIN
2	TU FG	IN	DETECTION SIGNAL FOR TAKE-UP REEL ROTATION/TAPE REMAIN
3	R.PAUSE IN/AV COMPULINK IN	IN	REMOTE PAUSE INPUT/NC
4	N.REC(H)	OUT	NORMAL AUDIO REC MODE CONTROL (REC: H)
5	RC IN	IN	REMOTE CONTROL DATA INPUT
6	TRICK[H]/M_TRICK[L]	-	NC
7	ET_PB[H]/HS_FR	-	NC
8	FULL.E.ON[H]/SEP_PB[H]	OUT	FULL ERASE HEAD ON: H/NC
9	S.CASSETTE	IN	DETECTION SIGNAL FOR SVHS CASSETTE (SVHS: H)
10	JSB	IN	INPUT FOR THE JOG SHUTTLE
11	LMC1	OUT	LOADING MOTOR DRIVE (1)
12	LMC2	OUT	LOADING MOTOR DRIVE (2)
13	RMO/R-Y_REV/BS_ANT_ON[H]	OUT	REMOTE CONTROLLER OUTPUT FOR CABLE BOX/NC/NC
14	POWER DET	IN	DETECTION SIGNAL FOR POWER DOWN OF AC POWER SUPPLY
15	CONV_CTL(H)/GR_ON[H]	OUT	RF CONVERTER ON/OFF (ON: H, OFF: L) /NC
16	CTL GAIN	OUT	CONTROL AMP OUT FREQUENCY RESPONSE SWITCHING
17	I2C_DATA_A/V	IN/OUT	SERIAL I/O DATA
18	I2C_CLK_A/V	OUT	SERIAL DATA TRANSFER CLOCK
19	SP_SHORT(H)/FLY_REC_ST[H]	OUT	MODE SELECT [HR-S3900U/U(C)] / FLY REC START: H [HR-S5900U/U(C)]
20	EP_SHORT(H)/FLY_REC(H)	OUT	MODE SELECT [HR-S3900U/U(C)] / REC TIMING CONTROL (FLY ERASE ON: H) [HR-S5900U/U(C)
21	SIDE BIND GAIN	OUT	VOLTAGE CONTROL SIGNAL FOR VIDEO FREQUENCY RESPONSE
22	CH SW	OUT	CHANNEL SWITCHING SIGNAL
23	D.FF	OUT	ROTATION DETECTION SIGNAL FOR DRUM MOTOR/TIMING CONTROL SIGNAL FOR REC
24	V.PULSE	OUT	V.PULSE ADDITION TIMING CONTROL
25	RESET	-	RESET TERMINAL (RESET ON: L)
26	A.FF	OUT	AUDIO FF OUTPUT
27	N.REC_ST(H)	OUT	NORMAL AUDIO SOUND RECORDING START
28	TU_I2C_CLK	OUT	SERIAL DATA TRANSFER CLOCK FOR TUNER
29	SLOW_PULSE	-	NC
30	H.REC_ST(H)	OUT	HiFi AUDIO SOUND RECORDING START
31	TU_MUTE(H)	OUT	TUNER AUDIO MUTE CONTROL (MUTE: H)
32	VP_CTL	-	NC
33	CAP_CTL_V	OUT	CAPSTAN MOTOR CONTROL
34	DRUM_CTL_V	OUT	DRUM MOTOR CONTROL
35	A.MUTE(H)	OUT	AUDIO MUTE CONTROL (MUTE ON: H)
36	VDD	-	SYSTEM POWER
37	X OUT	-	MAIN SYSTEM CLOCK (14.32MHz)
38	X IN	-	MAIN SYSTEM CLOCK (14.32MHz)
39	VSS	-	GND
40	XC IN	-	TIMER CLOCK (32.768kHz)
41	XC OUT	-	TIMER CLOCK (32.768kHz)
42	CLK SEL	IN	SELECT FOR BACKUP METHOD (LITHIUM OR E.CAPACITOR): H
43	P.MUTE(L)	OUT	PICTURE MUTE CONTROL (MUTE: L)
44	3.58NTSC[L]/P.SAVE[L]	-	NC / NC
45	V.REF/SYNC_DET[H]	-	NC / NC
46	PROTECT	IN	DETECTION SIGNAL FOR SWITCHING POWER SUPPLY
47	VIDEO_OUT	OUT	COMPOSITE VIDEO SIGNAL OUTPUT
48	VSS2	-	GND
49	CVIN	IN	COMPOSITE VIDEO SIGNAL INPUT
50	SYN_IN	IN	COMPOSITE SYNCHRONIZING SIGNAL FOR SERVO, VERTICAL SYNCHRONIZING SIGNAL FOR OSD
51	VDD2	-	SYSTEM POWER
52	AFCC	IN	FILTER INPUT FOR HORIZONTAL SYNCHRONIZING OF OSD CHARACTER
53	AFCLPF	OUT	FILTER OUTPUT FOR HORIZONTAL SYNCHRONIZING OF OSD CHARACTER
54	FSCI/BIT_IN(H)	-	NC
55	FSCLPF/BS_P.CTL	-	NC
56	I2C_DATA	IN/OUT	SERIAL I/O DATA
57	I2C_CLK/TEST	OUT	SERIAL DATA TRANSFER CLOCK / MECHANISM TEST SIGNAL
58	CHARAE	OUT	OSD CHARACTER DATA (FRINGE) OUTPUT
59	P.CTL[H]	OUT	CONTROL SIGNAL FOR SWITCHING POWER SUPPLY
60	CHARAM	OUT	OSD CHARACTER DATA OUTPUT
61	LSA	IN	MECHANISM MODE DETECT (A)
62	LSB	IN	MECHANISM MODE DETECT (B)
63	LSC	IN	MECHANISM MODE DETECT (C)
64	REC_SAFETY	IN	REC SAFETY SWITCH DETECT (SW ON: L)
65	D.FG_IN	IN	DRUM FG PULSE INPUT
66	D.PG_IN	IN	DRUM PICKUP PULSE INPUT (SWITCHING PULSE)
67	C.FG_AMP_OUT	OUT	SET-UP OUTPUT FOR CAPSTAN FG AMPLIFICATION FACTOR
68	C.FG_IN	IN	CAPSTAN FG PULSE INPUT
69	AMP_VREF_OUT	OUT	AMP CIRCUIT REFERENCE VOLTAGE OUTPUT
70	AMP_VREF_IN	IN	AMP CIRCUIT REFERENCE VOLTAGE INPUT
71	AVSS	-	GND
72	AMP_C	IN	CAPACITOR CONNECTION TERMINAL FOR CONTROL AMP CIRCUIT
73	AVCC	-	SYSTEM POWER
74	CTL_+	IN/OUT	CTL(+) SIGNAL
75	CTL_-	IN/OUT	CTL(-) SIGNAL
76	CTL_AMP_OUT	OUT	CTL PULSE OUTPUT
77	LOCK(L)	IN	TUNING PLL LOCK DETECT: L
78	AGC_CTL/BS_DEC[H]	-	NC
79	START SENSOR	-	NC
80	AFC/JUST CLK	IN	TUNING CHECK / NC
81	LED	IN	NC
82	VIDEO ENV	IN	AUTO TRACKING DETECT/INPUT THE AVERAGE OF PLAYBACK VIDEO SIGNAL
83	A.ENV/ND[L]	IN	AUDIO PB FM ENV. INPUT / NON HiFi MODE: L
84	END SENSOR	IN	END SENSOR
85	KEY1/IND[L]	IN	OPERATION CONTROL SIGNAL / NC
86	KEY2/IND[R]	IN	OPERATION CONTROL SIGNAL / NC
87	KILLER_DET/BS_ANT/COMPU_OUT	OUT	NC / NC / A/V COMPULINK OUTPUT
88	NORM/S	IN	
89	WIDE_DET	IN	WIDE ASPECT DETECTION
90	TU_I2C_DATA	IN/OUT	SERIAL I/O DATA FOR TUNER
91	J4/BIL_SEL	-	NC / NC
92	J5/V.UP[H]	-	NC / NC
93	J6/V.UP2[H]	-	NC / NC
94	CAP_REV[L]	OUT	CAPSTAN MOTOR REVERSE CONTROL (FWD: H/REV: L)
95	J3/STB	OUT	NC / STROBE (FOR FDP DRIVER)
96	S.CLK	OUT	SERIAL DATA TRANSFER CLOCK FROM THE FDP DRIVER TO THE ON-SCREEN IC
97	S_DATA_FRSYS	OUT	SERIAL DATA TRANSFER OUTPUT FROM THE FDP DRIVER TO THE ON-SCREEN IC
98	S_DATA_TOSYS	IN	SERIAL DATA TRANSFER OUTPUT FROM THE ON-SCREEN IC TO THE FDP DRIVER
99	LMC3	OUT	LOADING MOTOR DRIVE (3)
100	JSA	IN	INPUT FOR THE JOG SHUTTLE

4.19 SYSTEM CONTROL BLOCK DIAGRAM



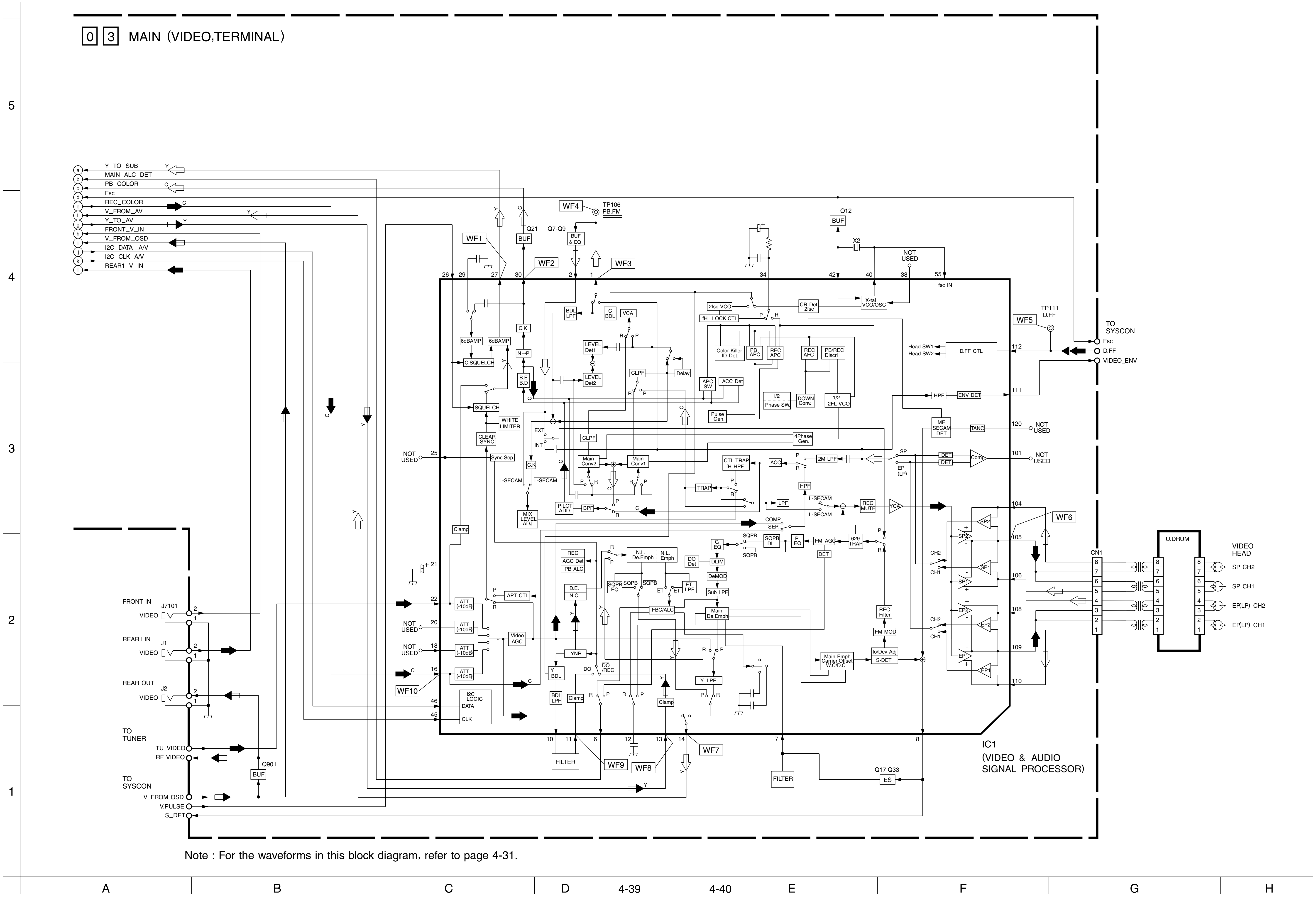
Note : For the waveforms in this block diagram, refer to page 4-31.

4.20 VIDEO BLOCK DIAGRAM



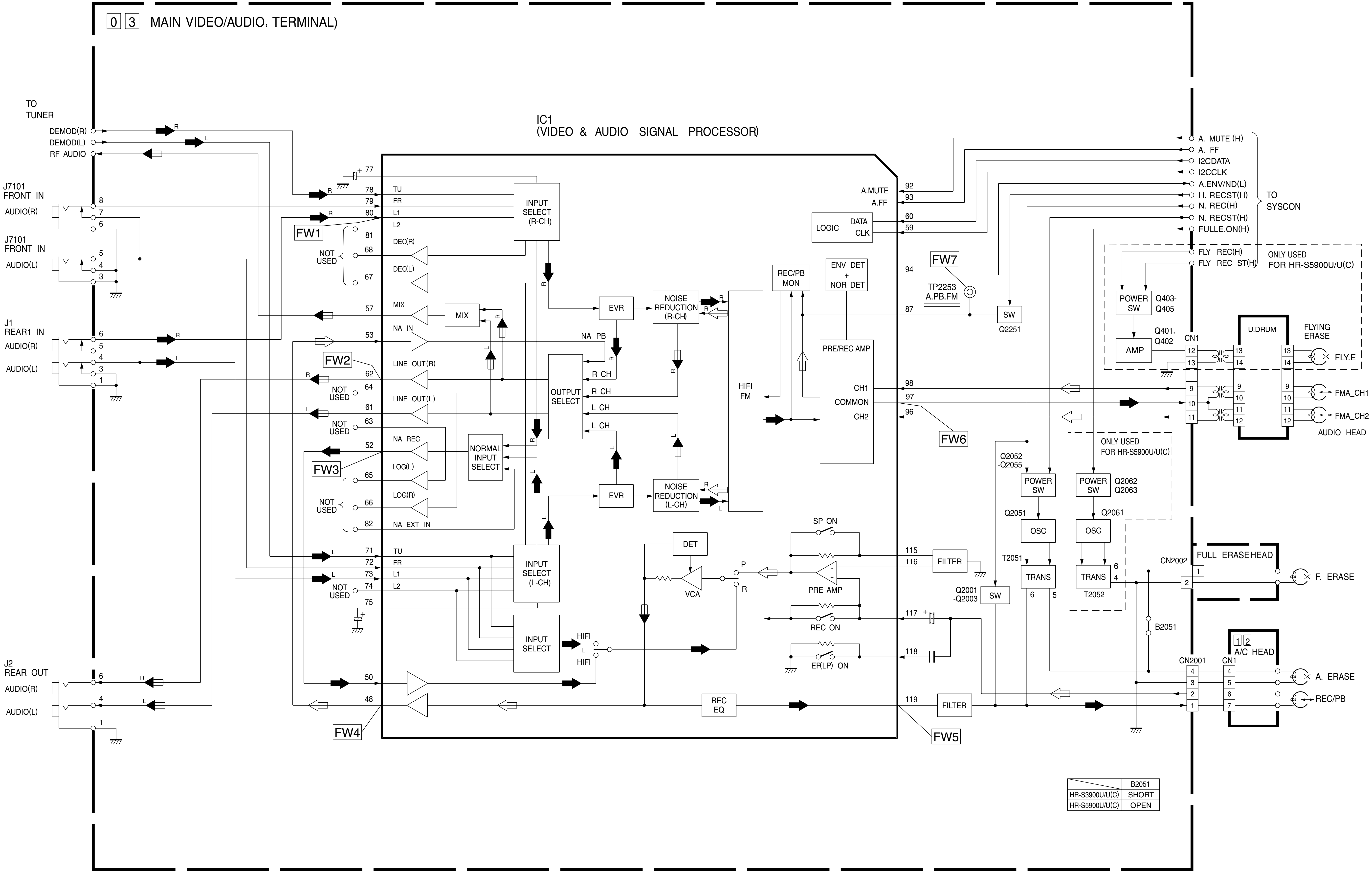
Note : For the waveforms in this block diagram, refer to page 4-31.

0 3 MAIN (VIDEO,TERMINAL)



Note : For the waveforms in this block diagram, refer to page 4-31.

4.21 AUDIO BLOCK DIAGRAM



	B2051
HR-S3900U/U(C)	SHORT
HR-S5900U/U(C)	OPEN

Note : For the waveforms in this block diagram, refer to page 4-31.